



UNITED STATES DEPARTMENT OF AGRICULTURE  
Forest Service

# Piney River Vegetation Project Environmental Assessment

Pedlar Ranger District, George Washington and Jefferson National Forests  
Amherst County, Virginia

January 2021

## Contact Information

Glenwood and Pedlar Ranger District  
27 Ranger Lane  
Natural Bridge Station, Virginia 24579  
Phone: 540-291-2188

Decision Maker, Glenwood and Pedlar District Ranger  
Lauren Stull



---

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.)

#### To File an Employment Complaint

If you wish to file an employment complaint, you must contact your agency's EEO Counselor (PDF) within 45 days of the date of the alleged discriminatory act, event, or in the case of a personnel action. Additional information can be found online at [http://www.ascr.usda.gov/complaint\\_filing\\_file.html](http://www.ascr.usda.gov/complaint_filing_file.html).

#### To File a Program Complaint

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form (PDF), found online at [http://www.ascr.usda.gov/complaint\\_filing\\_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html), or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter to us by mail at U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at [program.intake@usda.gov](mailto:program.intake@usda.gov).

#### Persons with Disabilities

Individuals who are deaf, hard of hearing or have speech disabilities and you wish to file either an EEO or program complaint please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish). Persons with disabilities, who wish to file a program complaint, please see information above on how to contact us by mail directly or by email. If you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.) please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

---

## CONTENTS

<b>CHAPTER 1.....</b>	<b>4</b>
PROPOSED ACTION.....	4
INTRODUCTION .....	4
PURPOSE AND NEED.....	6
SCOPE OF THE ENVIRONMENTAL ASSESSMENT.....	10
DECISION TO BE MADE .....	10
<b>CHAPTER 2 – ALTERNATIVES .....</b>	<b>11</b>
PUBLIC INVOLVEMENT.....	11
FOREST PLAN CONSISTENCY.....	11
ISSUES.....	11
ALTERNATIVES CONSIDERED.....	12
<b>ALTERNATIVE 1. MODIFIED PROPOSED ACTION(S).....</b>	<b>13</b>
<b>ALTERNATIVE 2. NO ACTION .....</b>	<b>17</b>
<b>ALTERNATIVES ELIMINATED FROM DETAILED STUDY .....</b>	<b>17</b>
DESIGN CRITERIA AND MITIGATION MEASURES.....	18
MONITORING .....	19
<b>CHAPTER 3 – ENVIRONMENTAL IMPACTS .....</b>	<b>19</b>
PAST, PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS .....	19
RESOURCES OR USES NOT PRESENT, OUTSIDE OF SCOPE OF ANALYSIS OR NOT AFFECTED .....	20
BIOLOGICAL ENVIRONMENT .....	20
Major Forest Communities .....	21
Old Growth .....	33
Non-Native Invasive Plant Species .....	39
Successional Forests and Associated Management Indicator Species .....	42
Forest Management Indicator Species (MIS) .....	42
Fisheries and Aquatic Habitat.....	48
Threatened, Endangered, Sensitive and Locally Rare Species .....	57
PHYSICAL ENVIRONMENT .....	59
Water (Hydrology) and Soil Resources .....	59
SOCIAL ENVIRONMENT .....	65
Visual and Scenic Resources .....	65
Recreation Resources.....	69
Access or Roads.....	71
Economics.....	74
<b>CHAPTER 4 – PROJECT CONSULTATION AND COORDINATION .....</b>	<b>77</b>
A. AGENCIES & ORGANIZATIONS CONSULTED .....	77
B. FOREST SERVICE INTERDISCIPLINARY TEAM MEMBERS.....	77
<b>LITERATURE CITED .....</b>	<b>78</b>

## APPENDIX A –MAPS

1. Vicinity Map
2. Large Scale Print Piney River Proposed Action Map
3. Proposed Action Map 1 of 2, 8 x 11
4. Proposed Action Map 2 of 2, 8 x 11

**APPENDIX B – RESPONSE TO COMMENT WITH SUMMARIZED SCOPING & DRAFT EA COMMENTS**

---

## **CHAPTER 1**

### **PROPOSED ACTION**

The Forest Service proposes the following activities to be implemented on the Pedlar Ranger District of the George Washington and Jefferson National Forests:

- **Vegetation treatments including 95 acres of regeneration and 38 acres of thinning mechanical harvest and 1,433 (broken into 2 burn units) acres of prescribed burning;**
- **1.1 miles of temporary roads;**
- **Complete other ancillary wildlife habitat improvement projects as well as road and recreation infrastructure improvement measures.**

We prepared this Environmental Assessment (EA) to determine whether implementation of the proposed activities may significantly affect the quality of the human environment. For a detailed description of the modified proposed action and all additional ancillary actions, see Chapter 2, Proposed Action.

### **INTRODUCTION**

The Piney River Vegetation Project area is located in Amherst County, Virginia. The project area is 5,583 acres in size. The project area is located approximately 12 miles east of Buena Vista. The following map identifies the project area location.

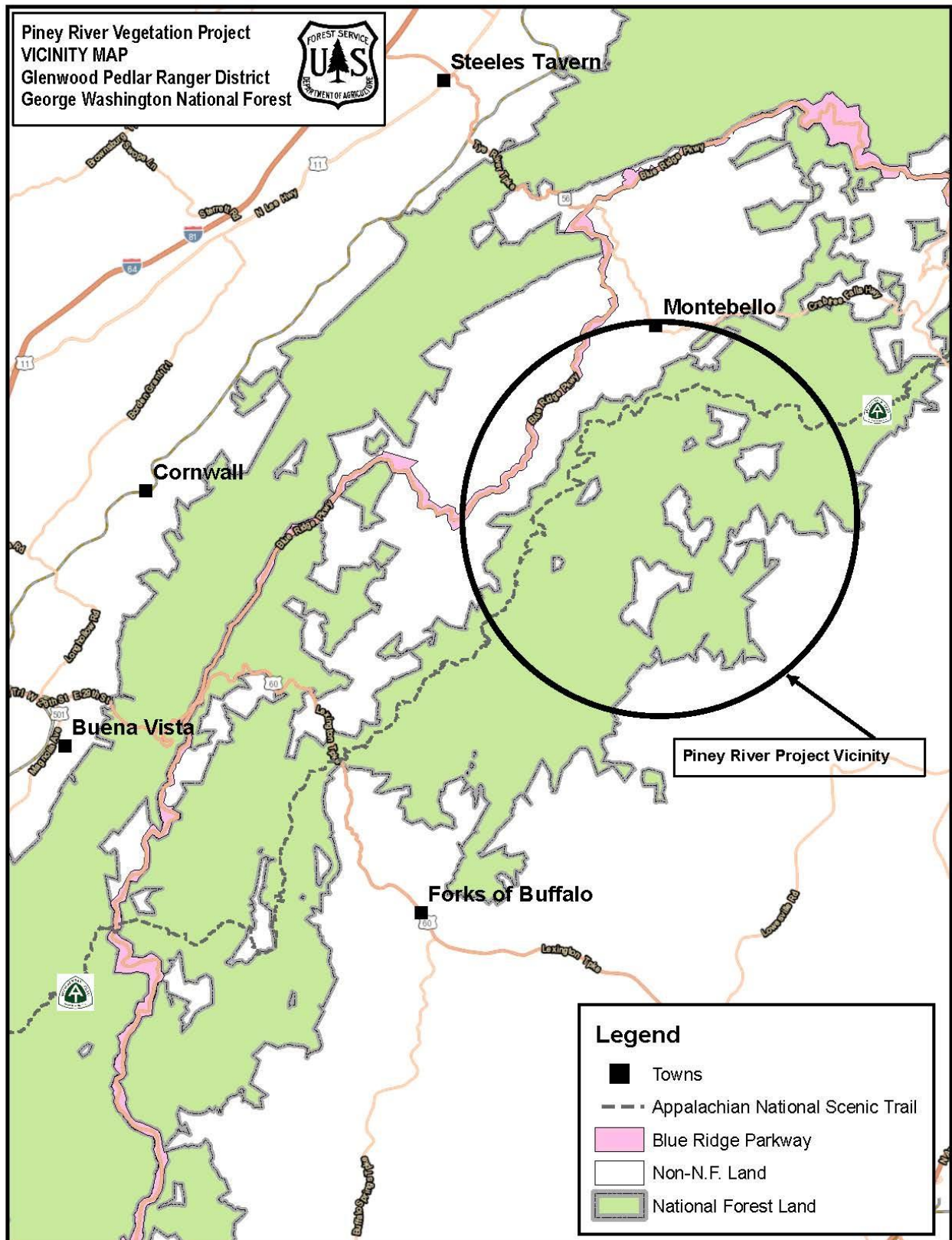


Figure 1. Piney River Project Location Map

---

This project was designed based on the vegetation management objectives of the 2014 Revised George Washington Forest Land and Resource Management Plan (Forest Plan).

This EA is organized into four chapters:

**Chapter 1 – Proposed Action:** This chapter describes the background of the project proposal, its purpose and need, the proposed action developed to achieve the purpose and need, the management direction for the project area and the scope of environmental analysis for this EA.

**Chapter 2 – Alternatives Considered:** This chapter describes in greater detail the alternative methods developed and considered to achieve the purpose and need. The public involvement process and how comments were used to inform the alternatives and design criteria are also outlined in this chapter.

**Chapter 3 – Environmental Impacts:** This chapter describes the potential effects of implementing the proposed action with analyses organized by resource and then focused on the potentially significant issues.

**Chapter 4 – Project Consultation and Coordination:** This chapter lists the agencies and persons consulted.

## **PURPOSE AND NEED**

The proposed treatments follow the Forestwide vision for the desired condition for forested ecological systems with an emphasis on forested structural diversity. As stated in the Forest Plan, an appropriate balance of vertical structure within forested communities provides habitat for associated terrestrial species that require various forest age/structural stages.

The Forest Plan's Environmental Impact Statement (EIS) page E-19 defines forested structural classes as follows:

- Early Successional or Regenerating Forest: Forest stands developing after a major disturbance (such as a regeneration harvest) generally less than 11 years in age.
- Late Successional Open Canopy Forest: Forest stands reaching older ages of mature trees (50-100 years or greater) and more lasting structural conditions with an overall open canopy (canopy closure of 25-60 percent: typical of thinned forests).

More specifically, the portion of national forest where this proposed action would take place has been allocated in the Forest Plan to Management Area Prescription (MA Rx) 13 - Mosaics of Habitat MA Rx 4D – Botanical-Zoological Areas (Special Biological Areas) and MA Rx 4A – Appalachian National Scenic Trail Corridor.

All mechanical treatments have been proposed in MA Rx 13. The desired conditions for MA Rx 13 include a landscape character that generally retains a natural forested appearance and features structurally diverse forest communities. There is currently very limited acreage within the early or late open forest canopy conditions in the project area. In MA Rx 13, these forest structural conditions can be achieved with the implementation of timber harvesting and/or prescribed fire. The last timber harvest in the project area occurred in the early 1990's. The proposed



regeneration harvests would provide an early successional forest stage while the proposed thinning harvest would provide a late successional open woodland structure.

Thinning these forest stands is an effective method to create a diverse horizontal and multi-layered vertical forest structure that a variety of wildlife and plant species need in order to thrive. Intermediate harvests such as variable retention harvest (thinning) would enhance species composition to benefit wildlife and forest health as well as enhance growth rates, form, and vigor of residual tree (paraphrased from Forest Plan page 3-24).

Standard 13-0005 identifies MA Rx 13 as suitable for timber production and includes management for a diversity of oak species (Forest Plan 4-133). Also, Standard 13-011 states that thinning is frequently used to increase volume production and tree vigor and to manage species composition (Forest Plan 4-134). The following table (Table 1) provides a summary of current forest structural stages and identifies opportunities to move toward the desired forest structure stages by ecological systems groups for the Piney River MA Rx 13 Project Area. Ecological System Groups were determined from the protocol used by Steven A. Simon of the Nature Conservancy and described in *Ecological Zones on the George Washington National Forest First Approximation Mapping*. In this publication, Ecological Zones (or Ecological System Groups) are described as units of land that can support a specific plant community or plant community group based upon environmental factors such as temperature, moisture, fertility, and solar radiation that control vegetation distribution. These zones may or may not represent existing vegetation, but instead, the potential vegetation that could occur on a site with historical disturbance regimes.

For MA Rx 13, prescribed fire plays an important role in the maintenance of forested communities. The Forest Plan defines prescribed fire as “any fire ignited by management actions to meet specific objectives including disposal of fuels and controlling unwanted vegetation. Prescribed fires are conducted in accordance with prescribed fire plans and are also designed to stimulate grasses, forbs, shrubs, or trees for range, wildlife, recreation, or timber management purposes.” In general, prescribed burning can be utilized to move towards the Forestwide vision for the desired condition for ecological systems diversity and is essential for the management strategy for the vegetation resource described in the Forest Plan. Fire management strategies support a variety of desired conditions and objectives across the Forest (e.g., to establish, maintain, control or restore forest vegetation, wildlife openings, open woodlands). The fire program includes, in part, using prescribed fire to reduce risk of damaging high intensity fires, reestablishing historic fire regimes, and restoring native ecosystems along with the plant and animal species those conditions support.

The proposed Crabtree Meadow prescribed burn unit and old field habitat enhancement actions are located within MA Rx 4D – Botanical-Zoological Areas (Special Biological Areas, SBA) and 4A – Appalachian National Scenic Trail (ANST) Corridor. The Upper Crabtree SBA is known for its aquatic natural community, which is a central Appalachian high elevation seepage swamp characterized by Hemlock, Yellow Birch, aquatic resources and two historically documented locally rare plants, Highland Doghobble, 1950 and Bog-willow herb, 1968. Embedded within these two management prescriptions is approximately 20 acres of high elevation old field habitat containing grass forb native pollinator vegetation, dogwood, crab apple, persimmon, big tooth aspen and other species requiring semi-open conditions. This unique high elevation habitat is at risk due to encroaching vegetation and requires manipulation and management. Vegetation

---

management activities are permitted in MA Rx 4D and 4A when attempting to maintain, enhance or restore the diversity and complexity of native vegetation, mimic historic fire regimes, maintain wildlife viewing opportunities and enhance scenic qualities of the ANST.

The control lines for the proposed Crabtree Meadow burn unit would consist of existing roads and trails including the ANST, therefore no ground disturbing activities would be necessary. Fire intensity is expected to be very low or non-existent in the riparian areas where the yellow birch, hemlock and aquatic resources are present. Mechanical activities would include selective cut and leave chainsaw use and brushing with a rotary style cutter-head attached to a rubber-tracked skid steer. These proposed mechanical and burning activities would occur on a 2-5 year rotation and give special consideration to the ANST, users and surrounding vegetation during implementation.

The proposed Brush Mountain prescribed burn unit is located within MA Rx 13 – Mosaics for Wildlife, MA Rx 4A – Appalachian National Scenic Trail Corridor, and Rx 7B – Scenic Corridors. The burn is predominately in MA Rx 13 and focuses on; the creation of open woodland habitat that ultimately stimulates soft mast production and browse; encouragement of oak sprouting for future mast production; maintaining, restoring and enhancing native forest communities to ensure the presence of fire-dependent species and ecosystems. These conditions can be achieved through many different practices. However, prescribed fire and timber harvesting is emphasized in MA Rx 13 to create and maintain ecosystem diversity. Mid-Late closed canopy conditions currently dominate the project area.

The proposed prescribed burn boundary was selected to utilize existing roads and streams as control lines to minimize soil disturbance and reduce costs associated with fireline construction. In doing so, a small portion of the proposed burn is located within MA Rx 7B and MA Rx 4A. Wildlife and fisheries habitat improvements are allowed in these areas to enhance wildlife viewing, hunting, and fishing opportunities in accordance with scenic integrity objectives and the enhancement of the trail environment. Watchable wildlife habitat improvements are encouraged. The proposed burn would occur on a 2-5 year rotation and give special consideration to the ANST, users and surrounding vegetation during implementation.

**Table 1. Desired and Existing Stage and Structural Conditions by Ecosystem Group for the Piney River Project Area**

Ecosystem Group	Approximate acres in Project Area	Desired % and acres in <b>Early Stage</b> and Structure	Existing % and acres in <b>Early Stage</b> and Structure	Existing % and acres in <b>Mid/Late Closed Stage</b> and Structure	Desired % and acres in <b>Mid/Late Open Stage</b> and Structure	Existing % and acres in <b>Mid/Late Open Stage</b> and Structure
Cove Forests	1,122 acres	4-6% or 45-67 acres	1% or 10 acres There is an opportunity to create up to 57 acres of early forest for this group.	98% or 1,103 acres	6-12% or 67-135 acres	Less than 1% or 9 acres There is an opportunity to create up to 126 acres of open late forest for this group.
Oak Forests and Woodlands	4,275 acres	9-11% or 385-470 acres	Less than 1% or 32 acres There is an opportunity to create up to 438 acres of early forest for this group.	98% or 4,180 acres	60-70% or 2,565-2,992 acres	2% or 64 acres There is an opportunity to create up to 2,928 acres of open late forest for this group.
Northern Hardwoods	161 acres	5-7% or 8-9 acres	1% or 2 acres There is an opportunity to create up to 7 acres of early forest for this group.	96% or 154 acres	8-12% or 13-19 acres	3% or 5 acres There is an opportunity to create up to 14 acres open late forest for this group.
Other Groups (Glades & Wetlands)	24 acres*	--	--	--	--	--
<b>Total</b>	5,582 acres	438-546 acres	44 acres	5,437 acres	2,645- 3,146 acres	78 acres

\*The Forest Plan does not include desired forest structure conditions for glades or wetlands.

Based on stream surveys conducted by The Center for Aquatic Technology Transfer (CATT) there is a need to add large woody debris in the South Fork of the Piney River and Little Piney River to move both streams towards the Desired Future Condition as it relates to pool/rifle ratios and associated habitats. More specifically, there is a need to add 100 pieces total of wood per mile to Little Piney River and 83 pieces of total wood per mile to the South Fork of the Piney in the greater than 15 feet in length/greater than 14-inch diameter and the less than 15 feet in length/greater than 14-inch diameter size classes.

District personnel have reviewed the Pedlar Ranger District's Travel Analysis Process (TAP) results which identified FSR 63A as a road recommended for decommissioning primarily due to its location within the riparian zone of the South Fork of the Piney River. Likewise, the closure of non-system roads within the Piney River Project Area from motorized vehicles would reduce the potential for soil erosion and subsequent sedimentation into the streams within the Piney River watershed.

Parking improvements at the Mount Pleasant National Scenic Area and the accessible picnic area at Crabtree Falls, located near the Piney River MA Rx 13 Project Area, are proposed to enhance the recreation experience for these popular destinations.

## **SCOPE OF THE ENVIRONMENTAL ASSESSMENT**

National Forest planning takes place at several levels: National, Regional, Forest, and Project. The Piney River Vegetation Project is a project-level analysis document; its scope is confined to addressing the purpose and need of the project and the possible environmental consequences of the proposal and alternatives. It does not attempt to address decisions made at higher levels. It does however; implement direction provided at higher levels.

The Final Environmental Impact Statement (FEIS) for the Forest Plan will guide this analysis. Together with the Plan, these documents provide the first, or programmatic, level of the two level decision process adopted by the Forest Service. These documents satisfy many requirements of the National Forest Management Act (NFMA 1976) while providing programmatic guidance. Where appropriate, the Piney River Vegetation Project EA tiers to the Revised Plan's Final Environmental Impact Statement (2014 FEIS) (40 CFR 1502.20).

This EA evaluates and documents the potential effects caused by the proposed activities and alternatives. Direct, indirect, and cumulative effects will be discussed for all alternatives. Cumulative actions will be limited to past and reasonably foreseeable future actions in addition to the actions of each alternative. For an action to be considered truly cumulative, effects due to that action must overlap the impacts of this proposed action in both time and space. The administrative scope of this document can be defined as the laws and regulations that provide the framework for the analysis contained in this EA.

## **DECISION TO BE MADE**

The deciding official, who for this project will be the Glenwood and Pedlar District Ranger, will review this environmental assessment and decide the following:

Should vegetative treatments including commercial timber harvest, site preparation (mechanical) and thinning be carried out in the project area at this time? If so, what are the most appropriate treatment methods and what specific areas should receive treatment? What roads, if any, are needed to access the treatment areas in the short and long term? Should fire be prescribed to reduce fuels and competing vegetation?

## **CHAPTER 2 – ALTERNATIVES**

### **PUBLIC INVOLVEMENT**

The Piney River project first appeared on the District's quarterly Schedule of Proposed Actions (SOPA) in the fourth quarter of fiscal year 2019 as the Piney River Vegetation Project and has appeared on the schedule as such since that time.

Scoping was conducted by the District Interdisciplinary Team (IDT) to gather information about the project area and to identify the issues and concerns related to the proposed action. Scoping letters were provided to interested and affected agencies, organizations, and individuals on September 6, 2019 informing them of the proposal and requesting their input. Ten letters were received in response to this initial scoping.

A summary of all comments and agency responses are included in Appendix B.

Comments were classified into two categories, Issues or Non-Project Issues, which is further described below.

### **FOREST PLAN CONSISTENCY**

Projects must follow the Forest Plan's direction including the Forestwide Management Requirements and individual management prescription direction and their associated standards. This EA displays site-specific consequences of implementing each alternative. Upon review all alternatives are consistent with the Forest Plan direction.

### **ISSUES**

Input gathered from all sources during the comment period was evaluated by the Interdisciplinary Team for relevance to the project and placed into one of two categories:

1. Project Issues- These issues are relevant to the project and are carried forward in the environmental analysis.
2. Non-Project Issues- These issues are ones that are not applicable to the project, usually for one of the following reasons: a) are beyond the scope of the proposed action, b) have already been decided by law, regulation or policy, or c) are conjectural, or not supported by scientific evidence.

In general, project issues are considered for formulating and developing alternatives (that are either analyzed in further detail or removed from analysis), identifying applicable design

criteria and/or mitigation measures, and in tracking and disclosing environmental effects. Disclosures of many of these environmental effects are required by law, regulation, policy or direction set in the Forest Plan. These project issues pertain to how the proposed action would impact various resources and will be used to identify mitigation measures and track and disclose environmental effects. For this project, no additional alternatives were generated from comments submitted, although comments were used to modify the proposed action, create mitigation measures, and to ensure all impacts to resources of concern were disclosed. These project issues include the following:

1. Timber harvesting may impact Inventoried Roadless Areas.
2. Timber harvesting and temporary road construction may impact portions of stands identified as old growth during field surveys.
3. Timber harvesting and road construction may aide in the establishment and spread of non-native invasive weeds.
4. The Modified Proposed Action Alternative would construct roads and conduct timber harvest activities that may impact slope stability and productivity, particularly on slopes greater than 35%.
5. Concern that the project may adversely impact water quality and aquatic communities in the project vicinity.
6. Concern over the interaction between hikers and log truck traffic.
7. The project may have negative impacts to the visual experience of the Mount Pleasant National Scenic Area, ANST and other surrounding viewpoints.
8. Timber harvesting and temporary road construction may have a negative impact on dispersed recreation opportunities in the area including hiking (in particular the ANST), hunting, bird watching, etc.

## **ALTERNATIVES CONSIDERED**

This chapter describes the various alternatives developed by the interdisciplinary team designed to respond to the resource needs of the project area and to specific issues and concerns identified through the public scoping process. Alternatives were designed with an interdisciplinary approach considering:

1. the size and scope of the project,
2. the purpose and need,
3. the issues, and
4. the expected environmental impacts.

The alternatives include mitigation measures and monitoring requirements. This chapter also provides a brief comparison of the alternatives. This information, along with the disclosure of

---

projected environmental consequences in Chapter 3 and other included analysis found in the project file, provides the decision-maker with the information necessary to make a reasoned choice between the alternatives. Alternatives considered but eliminated from detailed analysis area also briefly described.

#### ALTERNATIVE 1. MODIFIED PROPOSED ACTION(S)

The follow activities comprise the Modified Proposed Action for the Piney River Vegetation Project. The modification decreased regeneration harvest acres from 162 to 95 acres and reduced the variable retention harvest acres from 74 acres to 38 acres. Timber stand improvement unit 1 and commercial units 7, 8 and 9 and were removed from the proposal because they overlay an Inventoried Roadless Area. An error was made in planning of these units because the internal spatial data utilized to craft this proposal was inaccurate and inconsistent with externally facing spatial data that accompanied the Roadless Area legislation. The internal spatial data shows the Inventoried Roadless Area designation boundary as modified to follow the Mt. Pleasant National Scenic Area boundary which would have designated the area north of the Scenic Area as management prescription 13. The external spatial data that accompanied the 2001 Roadless Rule is the governing data and therefore this area should have been designated as Inventoried Roadless and is therefore not suitable for management. The Forest will work to rectify the internal spatial data. To rectify the situation these units were removed from the proposal. Unit 10 was removed to mitigate impacts to various resources that include but are not limited to Old Growth Forests, Heritage Resources, Visual Resources, and Riparian Corridors. The modified proposed action includes the following:

1. Regenerate by timber harvest, five hardwood dominated stands totaling approximately 95 acres (refer to Table 2 below). The proposed regeneration method for all five stands would be by coppice with reserves. Coppice with reserves is an even-aged regeneration method in which reserve trees (15 to 25 square feet of basal area per acre) are retained for goals other than regeneration such as scenery and wildlife. The primary objective of this regeneration method is the creation of early successional forest.

In connection with the harvest, these five stands would be site prepared for natural regeneration using chainsaws. This would entail slashing down residual trees between 1” and 6” diameter at breast height (DBH) after harvesting is completed. Healthy soft mast producing trees such as serviceberry and dogwood would be retained for a wildlife food source.

2. Complete a commercial thinning (also known as a variable retention harvest) on approximately 38 acres in two predominately hardwood stands. The objective of this thinning is to reduce stand density, thereby improving overall stand vigor and increasing growth of the residual trees while creating a mature open forest structure. The thinning would remove approximately 1/3 of the upper and middle canopy of these forest stands. Where areas of stands 1, 3 and 6 meet the old growth criteria, a higher basal area (40-90 sqft) would be retained via variable retention harvesting methods. Following treatment, Unit 1 would have an overall residual basal area of 40-90 square feet/acre. Units 3 and 6 contain 1 and 12 acres of old growth, respectively, and each would retain a residual basal

area of 40-90 square feet/acre in areas with identified old growth. However, the overall average residual basal area across Units 3 and 6 would be between 30-40 square feet/acre, which would be more aligned with a shelterwood with reserves regeneration harvest. Trees that exhibit indicators of rot, damage, or dieback would be given priority for harvest. Vigorous, healthy hard mast producers such as oaks and hickories within the stands would be given priority as leave trees. Table 2 below, provides a summary of the stands proposed for commercial harvest.

**Table 2. Stands Proposed for Commercial Harvest**

Unit Number	Compartment/ Stands	Acres	Ecosystem Group/ Forest Type**	Site Index	Age	Proposed Prescription	Method of Site Preparation	Logging System
1	1168/8	28	Oak/55	70	83	Variable Retention Harvest	N/A	Ground Based (Skidder)
2	1178/20	10	Oak/53	50	90	Variable Retention Harvest	N/A	Ground Based (Skidder)
3	1178/92	23	Oak/80	60	83	Coppice with Reserves	Site Prep for Natural Regeneration	Ground Based (Skidder)
4	1178/31	16	Oak/80	80	85	Coppice with Reserves	Site Prep for Natural Regeneration	Ground Based (Skidder)
5	1171/27	7	Cove/50	110	86	Coppice with Reserves	Site Prep for Natural Regeneration	Ground Based (Skidder)
6	1177/17	38	Oak/80	40	87	Coppice with Reserves	Site Prep for Natural Regeneration	Ground Based (Skidder)
7*	1174/24	11	Cove/50	115	76	Coppice with Reserves	Site Prep for Natural Regeneration	Ground Based (Skidder)

\*The current Unit 7 was previously documented as Unit 11 in the scoping document.

\*\*50 = Yellow Poplar, 53 = White Oak-Northern Red Oak-Hickory, 55= Northern Red Oak, 80=Upland Oak

Approximately 1,700 CCF of forest products would be produced from this project including sawtimber, pulpwood, and firewood. All stands proposed for harvest would utilize a ground-based logging system (such as a rubber-tired skidder) to remove the timber.

- Primary access to the harvest units would be from existing Forest Service Roads (FSR). For the Piney River Project Area primary access would be from FSR 63 – Piney River, FSR 48 – Hog Camp Gap, FSR 1167 – Coon Bridge, FSR1176 – Rocky Mountain, and FSR 246 – Greasy Springs. In addition, approximately 1.1 mile of temporary road would be constructed to provide vehicular access to proposed harvest Unit #4. The temporary road location would largely follow existing road prisms in order to minimize new ground disturbance. To facilitate the safe and efficient transport of forest products from the



harvested stands, all access roads (both temporary and system roads) would be day-lighted by cutting back trees and shrubs within the roads and along the road edges. After harvest, the temporary roads would be seeded with a non-invasive grass-forb mixture beneficial for wildlife and closed to vehicular traffic with an earthen berm.

4. Implement prescribed burns, totaling 1,433 acres in two separate burn blocks: Brush Mountain (approximately 1,239 acres) and the Crabtree Meadows (approximately 194 acres). Units 4 and 2 overlay the proposed Brush Mountain burn block. The primary objective of these prescribed burns is to improve wildlife habitat conditions by altering forest structure by consuming vegetation within the ground, shrub, and mid-story layers of the burn blocks. Another objective of these prescribed burns would be to reduce fuel loads and thereby reduce the risk of damaging high intensity wildfires. Control lines for both burn blocks would utilize existing roads, trails, and streams.

A Prescribed Fire Burn Plan would be completed for the prescribed burn units and approved by the appropriate Forest Service line officer prior to project implementation. An appropriate number of trained fire control specialists, as specified in the burn plan, would perform all burning operations. This tactical implementation plan would specify parameters, such as weather and fuel conditions, that must be observed before and during implementation. The tactical plan would also include a description of fire control line placement, appropriate ignition methods in specific firing patterns, and mop-up and patrol procedures.

A helicopter and/or hand crew would be used to ignite the burn blocks. The burn units would be treated with combinations of backing, flanking, spot, and strip head ignition sequences.

A smoke management plan would be developed for these burns. The plans would take into account predicted weather patterns, wind direction, smoke mixing heights, transport winds, smoke dispersion, and National Weather Service forecasts prior to, as well as on the days needed for the implementation of the burns.

Additionally, a contact list would be prepared to notify affected federal and state agencies, local fire departments, and nearby private land owners of the date of the burns. Likewise, the Forest Service would develop a contingency plan should the fire escape, being mindful of adjacent private land, dwellings, and other structures.

5. Expand and enhance existing old field habitat by mechanical methods in the headwaters of the South Fork of the Piney River at the base of Tar Jacket Ridge (approximately 90 acres) and in the headwaters of Crabtree Creek at Crabtree Meadows (approximately 20 acres). These areas are comprised primarily of brush and small saplings and are imbedded within the above-mentioned Crabtree Meadows burn block and the existing Tar Jacket Ridge burn block.
6. Other ancillary projects in this proposal include:

- Improve wildlife habitat by increasing the amount of open grass/herbaceous habitat by seeding with a non-invasive grass-forb mixture on skid trails and log landings, planting clumps of soft mast tree species within log landings. These habitat improvement projects would be implemented after harvesting is completed.
- Large Woody Debris (LWD) would be added to Little Piney River and the South Fork of the Piney River, where deficient, to enhance aquatic habitat and promote insect availability for fish populations.
- Improve dispersed parking at existing parking areas including Hog Camp Gap and the parking area for the Mount Pleasant National Scenic Area hiking trails.
- Improve the Crabtree Falls Visitor Parking Area by constructing an accessible picnic area.
- Replace a damaged culvert on Forest Service Road (FSR) 1167-Coon Bridge at its intersection with Georges Creek.
- Decommission Forest Service Road (FSR) 63A – Piney River Rod & Gun, approximately 1.3 miles.
- Closure of user-created unauthorized roads within the project area.

**Table 3. Summary of the Modified Proposed Action**

<b>Treatment / Action</b>	<b>Extent</b>
<b>Commercial Treatments (in acres)</b>	
Regeneration Even Aged Management – Coppice with Reserves	95
Variable Retention Thinning	38
<i>Total commercial treatment</i>	<b><i>133</i></b>
<b>Roads, Skid Trails and Landings</b>	
Temporary roads (includes seeding / revegetation to return to natural state)	1.1 miles (5,637 feet)
Skid trails	11,496 feet estimated 10 foot width = 2.6 total acres
Bladed skid roads	8,478 feet estimated 12 foot width = 2.3 total acres
Log landings	7 landings estimated to each measure 0.25 acres = 1.75 acres
<b>Prescribed Burning (in acres)</b>	
Brush Mountain - unit 2 (thinning, 10 acres) and unit 4 (coppice with reserves 16 acres) overlay this burn unit	1,239
Crabtree Meadows	194 acres
<i>Total prescribed burn treatment</i>	<b><i>1,433</i></b>

<b>Firelines (in feet)</b>	
Handlines	1 mile (5,280 feet)
<b>Ancillary Vegetative Treatments / Restoration / Recreation or Safety Actions</b>	
Expansion and enhancement of existing old field habitat (90 acres at the base of Tar Jacket Ridge and 20 acres at the headwaters of Crabtree Creek at Crabtree Meadows)	110 acres
Placement of LWD at Little Piney River and South Fork of the Piney River	100 pieces per mile for Little Piney River and 83 pieces per miles for the South Fork of the Piney River
Improved dispersed parking at Hog Camp Gap and Mount Pleasant National Scenic Area hiking trails	2 areas
Improve Crabtree Falls Visitor Parking Area	1 area
Replace culvert on FSR 1167 Coon Bridge	1 total
Decommission FSR 63A – Piney River Rod and Gun	1.3 miles
Closure of unauthorized roads	1.4 miles
Mechanical site prep (chainsaws)	95 acres

## ALTERNATIVE 2. NO ACTION

No vegetative treatments or other actions described in Chapter 1 and 2 of this document would be implemented under this alternative. Current management would continue. The no action alternative recognizes that ecosystems change in the absence of active management. It is essentially the “status quo” that allows current activities and policies, such as road and wildlife opening maintenance, and wildland fire management to continue.

## ALTERNATIVES ELIMINATED FROM DETAILED STUDY

Alternatives were considered but not proposed for detailed study because they did not contribute to the purpose and need of the action, were inconsistent with Plan management direction, or were not feasible due to existing conditions in the project area. Potential alternatives that received the most consideration but were dropped from detailed analysis are described below.

### *Expanded Vegetation Management*

Additional harvest units were considered but removed due to access, operability, and Forest Plan suitability.

### *Uneven Age Management*

The Forest Plan has identified the recommended silvicultural regeneration methods for specific forest community types. Based on the forest community types proposed for regeneration, uneven-aged methods (either single tree selection or group selection) are rated as either not recommended or possible which leaves a question of regeneration success when utilizing these

methods. Moreover, implementation of an uneven age management system requires more frequent entries to achieve the desired age class distribution. FW standard 133 (pg. 4-14) outlines three criteria must be met for uneven-age management to be considered in an area. The area must: (1) be at least 100 acres in size; (2) have slopes less than 30%; and (3) be within ½ mile of an existing road. These criteria were developed to identify the limiting physical features for a viable commercial timber sale utilizing uneven-age harvesting methods. In the absence of any of the three criteria, a viable uneven-age sale offering does not exist, irrespective of other biological and social considerations. Using the above criteria, the two portions of MA Rx 13 were reviewed to determine the location of lands meeting the above uneven-aged criteria. Although scattered small areas met criteria 2 & 3 (slopes less than 30% and within ½ mile of an existing road), no area met all three criteria within the project area. Therefore, an alternative that would utilize uneven age management was considered but not analyzed in detail.

## **DESIGN CRITERIA**

Each action alternative would follow all applicable Forestwide Design Criteria described in Chapter 4 of the Forest Plan. These standards can be found in the Forest Plan on pp. 4-1 through on pp. 4-25. Also, applicable MA Rx Standards for 11 – Riparian Corridors, pp. 4-121 through 4-126, 4A – Appalachian National Scenic Trail Corridor, pp. 4-42 through 4-47, 7B – Scenic Corridor, pp. 4-81 through 4-84 and 13 – Mosaics for Habitat pp. 4-133 through 4-135 would be followed. Potential effects can be reduced or eliminated by implementing design criteria specified in the Plan standards and through use of Virginia Department of Forestry Best Management Practices (BMPs) for Water Quality (2011 Revision).

### **Project-Specific Design Criteria**

The following project specific design features would be followed for all alternatives:

1. For public safety, the timber purchaser would obtain a road entrance permit for State Road 629 from the Virginia Department of Transportation (VDOT) prior to harvesting.
2. For public safety, a road signage safety plan would be included in all timber sale contracts. All Forest Service system roads used to haul logs would be signed with log truck warning signs.
3. Where there are small inclusions of steeper slopes (over 35%) in the harvest units, winching of logs to a skid road to mitigate the slope and avoid excessive skid road building would be required and included in the timber harvest contract.
4. A directional felling provision would be included in the timber sale contract to ensure that trees are felled away from open Forest Service roads and away from adjacent private ownership.
5. A slash treatment provision would be added in the timber sale contract to ensure slash buildup is minimized in harvest units alongside open Forest Service roads.
6. For public safety, when felling trees adjacent to open Forest Service roads, lookouts/flagmen would be used to control traffic.
7. To protect cultural resources, an inventory of the project area was completed. All known locations of cultural resources would be avoided during harvesting and measures to protect them would be taken. If during implementation a cultural

resource is found, all operations in the harvest unit would cease and the Forest Archeologist would be consulted to determine a course of action.

8. To alert trail hikers, Log Truck warning signs would be posted on the Appalachian National Scenic Trail at the intersection with FSR 246 and at the intersection with FSR 63.
9. A buffer of retention trees approximately 60 – 70 feet should be retained along Forest Service Road 63 adjacent to unit 5 and State Route 629 adjacent to unit 7.
10. In Unit 6 retention of trees should be focused on high elevation areas of the unit to minimize the visual impacts to the Henry Lanum Loop Trail and FSR 63.

## **MONITORING**

Monitoring of the project actions will occur to ensure that various aspects of the project adhere to the standards of the Plan, the applicable State Best Management Practices, and conform to project-specific mitigation measures set forth in this document. Monitoring will also occur to verify that accuracy of the predicted effects this assessment discloses. Specific monitoring responsibilities and activities include:

The Timber Management Assistant (TMA)/Silviculturist and District Biologist will review the project prior to implementation to ensure that the locations of any access routes, sale boundaries, and the silvicultural prescriptions are carried out as described by this assessment.

The Timber Sale Contract team, primarily the Timber Sale Administrator, will ensure actual operation of the timber sale follows measures described in this assessment.

The District TMA/Silviculturist/Forester/Technicians will survey the stands 3 years following sale closure to determine harvest areas have regenerated adequately. A significant part of certifying regeneration will be to monitor for the presence of any non-native invasive species in these areas and provide remedial recommendations for treatment.

The District TMA/Silviculturist will monitor all road locations, landings and bladed skid roads during sale administration and prior to sale closure to ensure sites are stable and adequately re-vegetated and will monitor control needs of non-native invasive species.

## **CHAPTER 3 – ENVIRONMENTAL EFFECTS**

The chapter describes the existing condition of the project area and discloses the anticipated direct, indirect, and cumulative impacts of the proposed project. The Project Record provides a central location where project information used in analysis is filed and will remain accessible to the public until a final decision for the project is signed. The Project Record is available for public inspection at the Glenwood and Pedlar Ranger District Office, 27 Ranger Lane, Natural Bridge Station VA 24579.

## **PAST, PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS**

As required under NEPA and the regulations implementing NEPA, interrelated projects are considered in determining potential cumulative impacts from past, present and reasonably foreseeable future actions combined with the proposed action. Cumulative effect analysis areas were defined by each resource to better understand anticipated effects (40 CFR 1508.7).

Past activities in the project area are:

- The current proposed units have seen previous treatments of thinnings, intermediate cuts, and clear cuts in 1979-1981 and again in 1992-1994.
- The Tar Jacket Prescribed Fire of 2011, 2014, and 2017 burned approximately 200 acres within the southwestern part of the Piney River area, overlapping the 90 acre proposed old field habitat enhancement.
- Nearly 7 acres of non-native invasive species (NNIS) treatments in the Crabtree Meadows area occurred in 2017, overlapping the Crabtree Meadows proposed old field habitat enhancement.

Future and Ongoing activities:

- Roadside NNIS management along Forest Service system roads within and adjacent to the Project Area.
- Tar Jacket and Cole Mountain Prescribed burning in 2-5 year intervals
- Old field maintenance

## **RESOURCES OR USES NOT PRESENT, OUTSIDE OF SCOPE OF ANALYSIS OR NOT AFFECTED**

Resources or uses that were not present or directly or indirectly impacted by the alternatives and not further analyzed or whose analysis was out of the scope appropriate for this project include:

- Heritage and Cultural Resources: A Phase 1 reconnaissance archeological survey was completed in the project area. The survey covered all proposed cutting units and activities within these areas (bladed skid roads, landings), temporary road construction, and fire line construction. The project was modified accordingly to prevent any impacts to identified resources. Any identified resources would be avoided. The State Historic Preservation Officer concurred with this finding.
- Lands and Special Uses
- Inventoried Roadless Areas (Inventoried Roadless Areas are no longer a project issue requiring additional analysis due to the dropping of commercial harvest units 7, 8 and 9 and timber stand improvement unit 1).
- Wilderness
- Climate Change

Additional details describing the resources and uses mentioned above are located in the Project Record.

## **BIOLOGICAL ENVIRONMENT**

## **Major Forest Communities**

### Scope of the Analysis

The geographic bounds for the discussion of direct, indirect, and cumulative impacts on vegetation will be limited to the immediate acres receiving a treatment. Since vegetation does not move, only activities in the immediate vicinity of a plant will generally have an impact on that plant. The geographic bounds for an analysis of structure, stage and ecosystem group distribution will be the contiguous block of MA Rx 13- Mosaic of Habitat identified as the Piney River Vegetation Project Area. The other management prescriptions in the vicinity of the project area is MA Rx 4A- Appalachian National Scenic Trail Corridor and MA Rx 4D- Special Biological Area, which overlap with the two proposed prescribed burn blocks and the Crabtree Meadow proposed old field habitat enhancement area. See Figure 2 below.



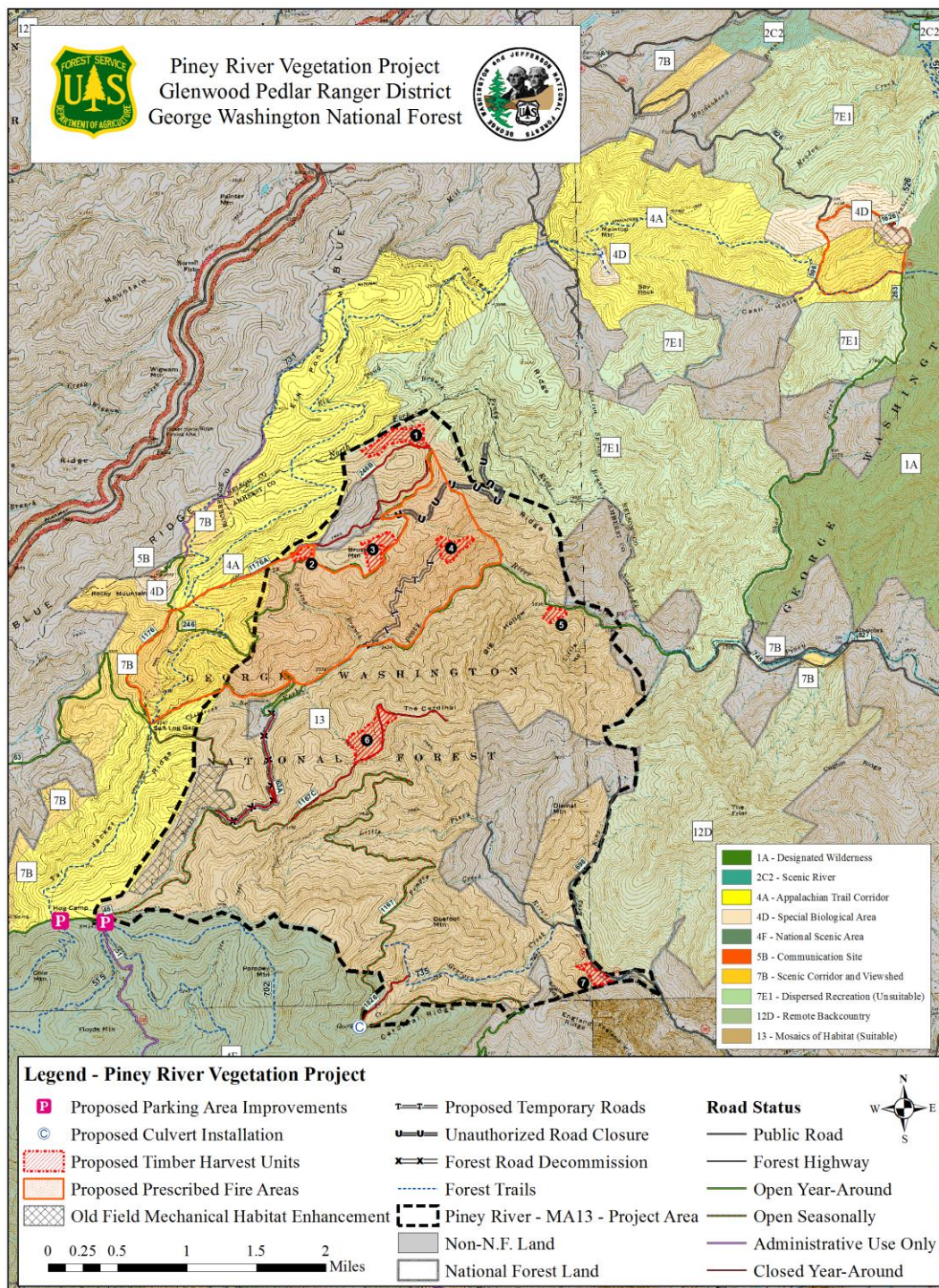


Figure 2. Map of Activities with Management Area Prescriptions

## Existing Situation

The existing forest stand conditions are a result of past practices before and after national forest acquisition. Some of the project area was acquired by the Forest Service in the 1930's, while another large portion was acquired in the 1970's. There are signs on the landscape that indicate



that portions of the project area contained homesteads where the surrounding land was farmed for crops and for livestock grazing. The previous landowners of the project area include the Leftwich Lumber Company, W.H. Richeson, and E. Langhorne. Prior to national forest acquisition, much of the forest in the project area was cut in a manner that could be considered extensive high grading for the lumber company or clearcut for homesteading and farming. Market value often dictated timing of cutting as different species became valuable at different times and for different purposes. The areas that show signs of more recent harvest (approximately the last 40 years), are along the current road system. However, there are large areas, within the project boundary, that have much older timber with limited road access and steep terrain and thus have had little to no harvest activity in its recent history. The last timber harvest in the project area occurred over 25 years ago. The stands that were harvested in the past are now fully regenerated and can be described as mid successional habitat condition.

The forest stands in the Piney River project area are generally densely stocked with a closed canopy condition for structure, and mostly a late or mid age for stage, as found from running the Departure Analysis Model, shown in Figures 3 and 4.

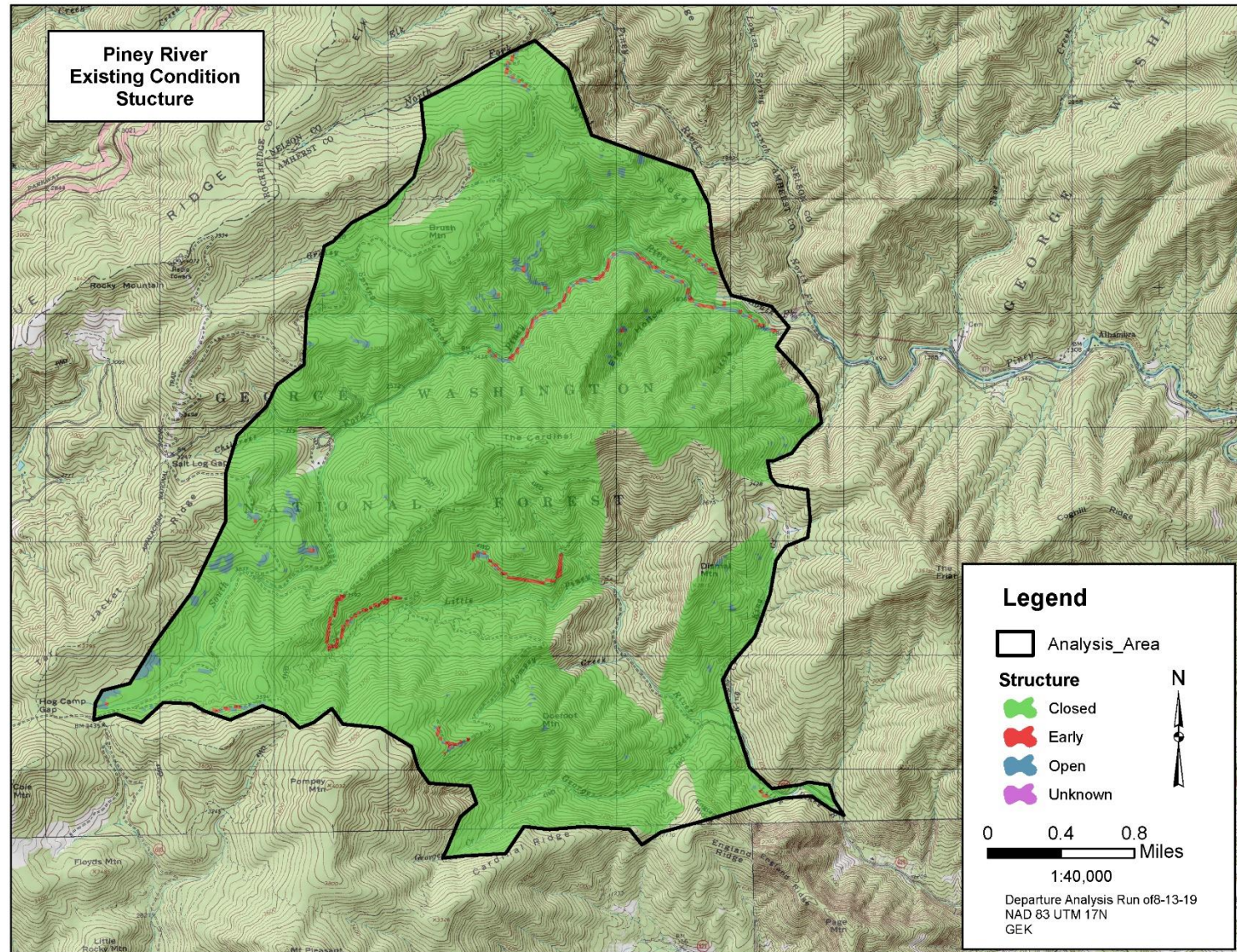


Figure 3. Departure Analysis Existing Condition for Structure



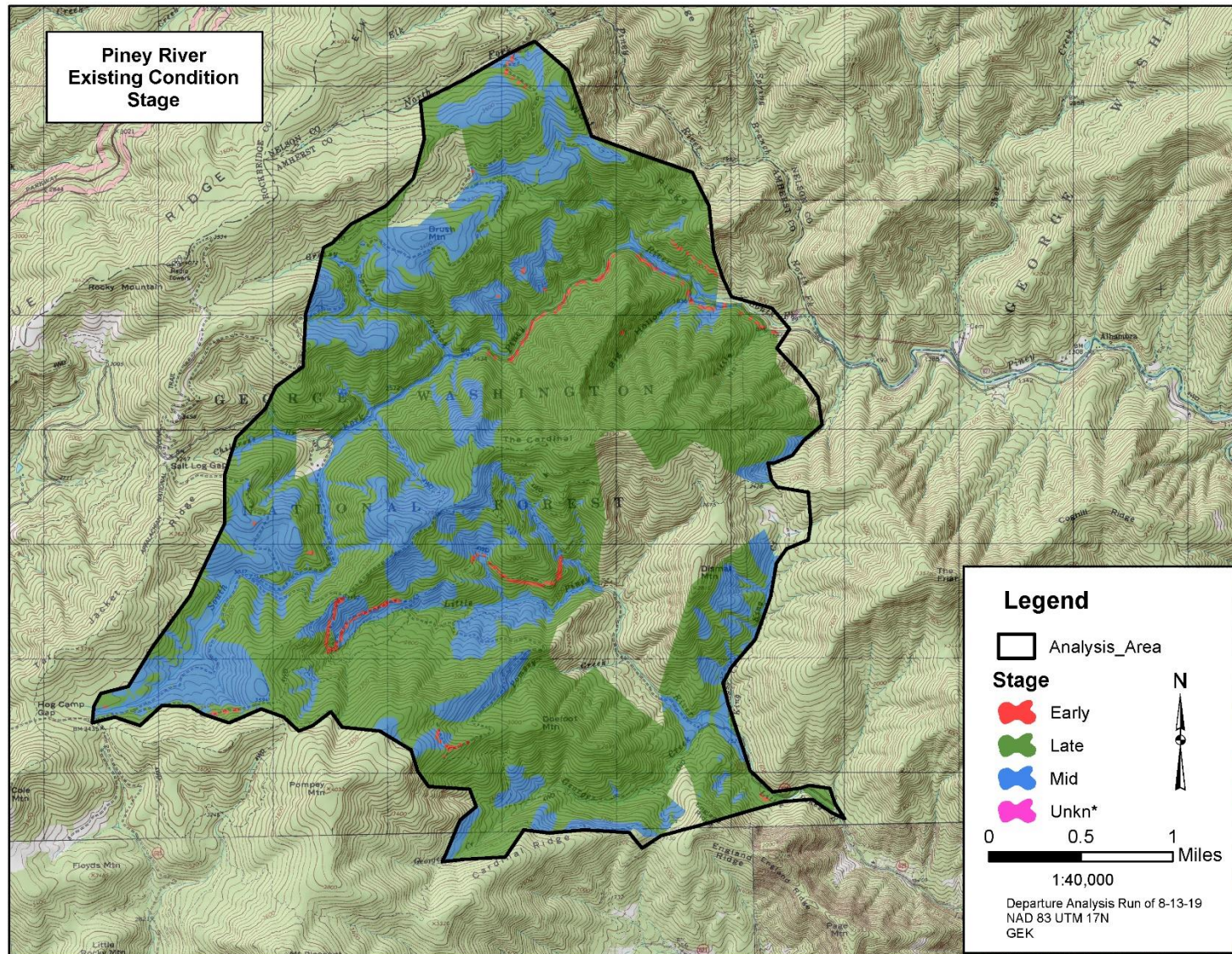


Figure 4. Departure Analysis Existing Condition for Stage

Oak species dominate the landscape of the project area, varying between white oak-northern red oak-hickory, chestnut oak, and upland oak stands on the higher, well drained ridges to yellow poplar and oak mixed in cove areas of deeper more moist soils with higher site indexes. There is also a small component of stands that contain a predominant black cherry or sugar maple- beech-yellow birch composition. Site index ranges from very good to poor with soil depth and moisture being the limiting factor. On the more xeric, southwestern facing slopes, yellow pine-oak stands can be found. These relatively low site index stands often have poor quality declining stands amongst a thicket of mountain laurel growing below them. The mid-story layer contains striped and red maple, sassafras, black gum, sweet birch, white ash, cucumber tree and hickory species. Advanced oak regeneration is sparse and is generally no more than 12 inches in height. Species found in the understory include black gum, red maple, sassafras, along with patches of mountain laurel. The ecosystem groups represented in the existing current condition of the project area are shown in Figure 5 below from the departure analysis.



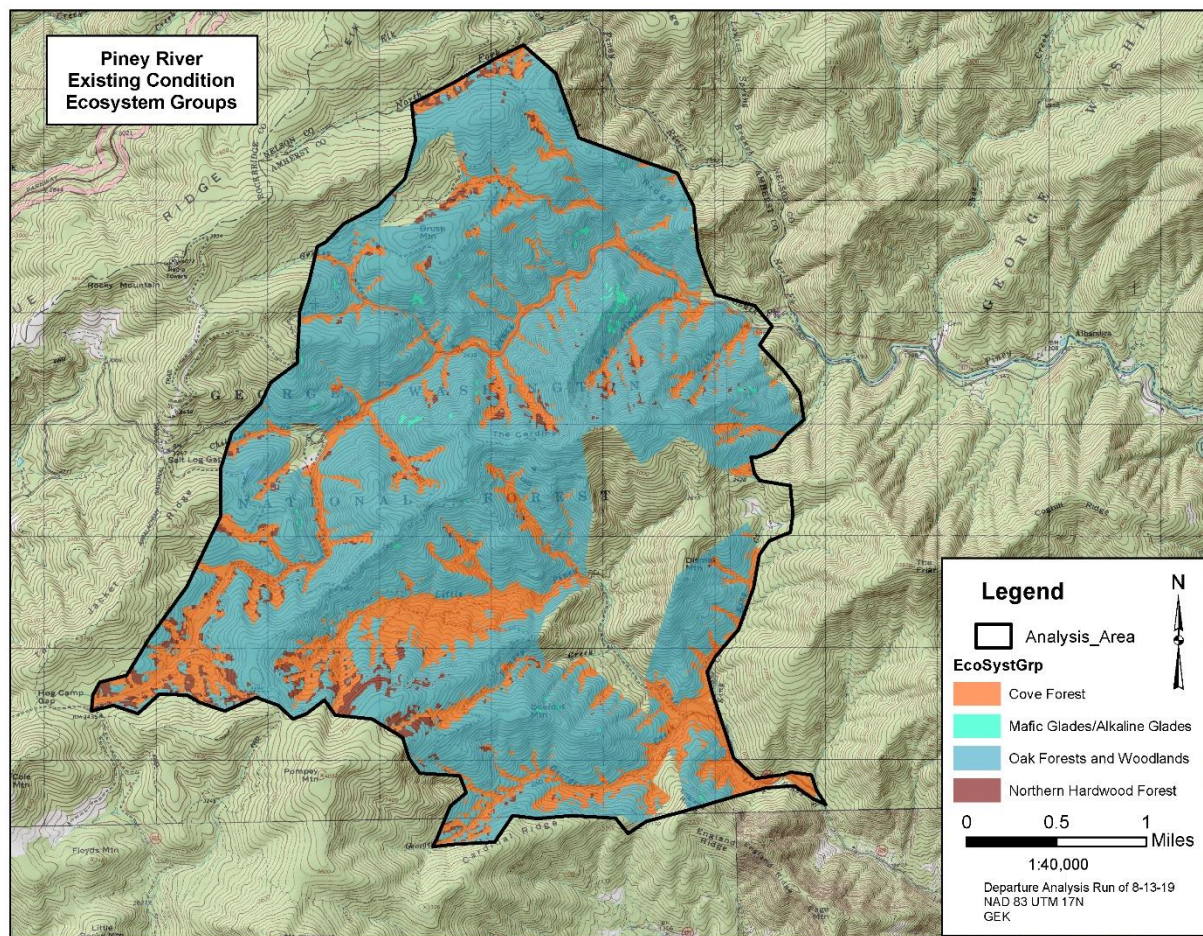


Figure 5. Departure Analysis Existing Condition for Ecosystem Groups

Table 4 below breaks down the results from the departure analysis of existing and desired stage and structural conditions by ecosystem group in terms of percent and acres in the project area, along with amount of acres there is an opportunity to treat to bring the project area closer to the desired condition.

**Table 4. Desired and Existing Stage and Structural Conditions by Ecosystem Group for the Piney River Project Area**

Ecosystem Group	Approximate acres in Project Area	Desired % and acres in Early Stage and Structure	Existing % and acres in Early Stage and Structure	Existing % and acres in Mid/Late Closed Stage and Structure	Desired % and acres in Mid/Late Open Stage and Structure	Existing % and acres in Mid/Late Open Stage and Structure
Cove Forests	1,122 acres	4-6% or 45-67 acres	1% or 10 acres There is an opportunity to create up to 57 acres of early forest for this group.	98% or 1,103 acres	6-12% or 67-135 acres	Less than 1% or 9 acres There is an opportunity to create up to 126 acres of open late forest for this group.
Oak Forests and Woodlands	4,275 acres	9-11% or 385-470 acres	Less than 1% or 32 acres There is an opportunity to create up to 438 acres of early forest for this group.	98% or 4,180 acres	60-70% or 2,565-2,992 acres	2% or 64 acres There is an opportunity to create up to 2,928 acres of open late forest for this group.
Northern Hardwoods	161 acres	5-7% or 8-9 acres	1% or 2 acres There is an opportunity to create up to 7 acres of early forest for this group.	96% or 154 acres	8-12% or 13-19 acres	3% or 5 acres There is an opportunity to create up to 14 acres open late forest for this group.
Other Groups (Glades & Wetlands)	24 acres*	--	--	--	--	--
<b>Total</b>	5,582 acres	438-546 acres	44 acres	5,437 acres	2,645- 3,146 acres	78 acres

\*The Forest Plan does not include desired forest structure conditions for glades or wetlands.

### Summary of Silvicultural Prescriptions for the Modified Proposed Action

Following Forest Plan direction, all 7 proposed harvest units are within MA Rx 13, which is classified as suitable for timber production. Regeneration potential was evaluated in all stands considered for regeneration. The purpose of this evaluation was to determine if there would be enough stems per acre of desirable species following the proposed regeneration methods. The most desirable species include oaks, hickories, and yellow poplar. The source of regeneration for each of the stands to be regenerated by the coppice with reserves method would primarily come from stump sprouting. Advanced regeneration and the germination of seeds would, to a much lesser extent, also be sources of regeneration in these stands.

#### *Coppice with Reserves*

With the modified proposed action, a coppice with reserves regeneration harvest within 5 predominately hardwood stands totaling approximately 95 acres (Units #3, #4, #5, #6 and #7) would be completed. The primary objective of this regeneration method is the creation of early successional forest. Coppice with reserves is an even-aged regeneration method in which reserve trees (15 to 25 square feet of basal area per acre) are retained for goals other than regeneration such as scenery and wildlife. Reserve trees would be left in clumps throughout the harvest units. The overstory trees would be left in the stand indefinitely in order to maintain portions of the stands in older trees, to realize additional growth on overstory trees, to provide structural diversity, to provide wildlife den trees, to provide a hard mast food source, or to enhance scenic values. Generally, trees that exhibit indicators of rot, damage, or dieback would be given priority for harvest.

Following harvest, site preparation would take place in all 5 units, by slashing down residual trees between 1" and 6" DBH with chainsaws. Some soft mast producing trees (Serviceberry and Dogwood) would be retained, scattered throughout the units as appropriate and when determined not to be an issue for desired regeneration.

#### *Commercial Thinning*

Complete a variable retention harvest on approximately 38 acres in 2 predominately hardwood stands (Units #1 and #2). The objective of this thinning is to reduce stand density, thereby improving overall stand vigor and increasing growth of the residual trees while creating a mature open forest structure. The thinning would remove approximately 1/3 of the upper and middle canopy of these forest stands. Trees that exhibit indicators of rot, damage, or dieback would be given priority for harvest. Vigorous, healthy hard mast producers such as oaks and hickories within the stands would be given priority as leave trees. Also, to move these stands toward the desired condition for MA Rx 13, soft mast producing trees species such as serviceberry, flowering dogwood, and black cherry would be retained for a wildlife food source.

## Direct and Indirect Effects

### **Alternative 1 (Modified Proposed Action)**

Under this alternative approximately 133 acres would be managed under a combination of even-aged and intermediate systems by commercial timber sale. During this cutting cycle, approximately 95 acres of regeneration harvest would be carried out across 5 cutting units. Commercial thinning would occur in 2 units on approximately 38 acres.

This alternative would result in increased early successional habitat that is distributed across the project area. After harvest, approximately 95 acres or 2% of the MA Rx 13 acres would be in the early structure and stage. The project area would retain oak species as the dominant species group aided by harvests and post-harvest treatments. Within the oak component, white oak, chestnut oak and northern red oaks are expected to remain dominant because of their sprouting potential and they are the dominant species in the project area.

Progress towards the early successional habitat objectives of this project would be made through proposed commercial timber regeneration harvests designed to create early successional forested conditions, which provide food, hiding, and nesting cover for a variety of wildlife species including cerulean warbler and golden-winged warbler. The early successional food source created includes soft mast produced from several species such as pokeberry, blackberry, and blueberry. Soft mast can mitigate the impacts of years when acorn production is low as the mast producing hardwoods regenerate. These young stands would also ensure a steady supply of hard mast in the most productive age classes in the future.

The 5 stands regenerated with coppice with reserves would retain an average of 15 to 25 square feet of basal area of the overstory. With the implementation of the coppice with reserves regeneration method, the dominant cover of the harvested stands in the short and intermediate terms would consist of a clumped overstory of mature trees with an understory of regeneration. Whenever possible the leave trees retained would be clumped in small groups and include longer-lived species that produce hard mast such as white oak, chestnut oak, and hickory. Large hollow trees and snags would also be left as they are desirable den sites for wildlife. The harvesting of these stands would allow for the regeneration of trees within the harvest areas while providing a volume of forest products. In these proposed regeneration units, there are a sufficient number of stems of a size and age to provide stump sprouts. These sprouts would provide the primary source of oaks and hickories in the new stand since advanced oak regeneration is low. When compared to full overstory clear cut, less sunlight would reach the forest floor of these regeneration units resulting in more competition between oak species and shade tolerant species such as red maple. This shift in species composition away from oak may occur particularly in portions of Units # 5, and 7 which have a higher site indexes (>110). The result in these stands, could likely shift to an increase in yellow poplar regeneration over oak species as yellow poplar generally out-competes oak in regeneration on higher quality sites.

In Units #3, 4, and 6 with a lower site index range of 40-80, the retention of approximately 15% of the overstory would allow abundant sunlight to reach the forest floor to aid in the growth of shade intolerant species such as yellow poplar and oaks which are intermediately tolerant to



shade. Use of the coppice with reserves regeneration method would leave some mature trees on the site to act as a long term seed source.

Based on past monitoring of regenerated stands on the Glenwood and Pedlar Ranger Districts in general, and from previous regeneration harvests in the project area, it is reasonable to assume that the harvested areas can be fully regenerated within five years after harvest under the guidelines set up on Table 4-4, page 4-14 of the Forest Plan (Standard FW-131).

The post-harvest site preparation treatment on the regenerated units would aid in controlling competing vegetation and allow more sunlight, water, and nutrients for desirable species regeneration. A manual site preparation would be conducted in which all trees >1 inch and <6 inches in DBH would be cut to the ground. Manual site prep is selected to cut undesirable tree species to ground level, and give the undamaged, well formed, hard and soft mast producing species a competitive advantage. Species such as black gum and sourwood would be forced to regenerate along with the stump sprouting oak. This would reduce overtopping of the oak stump sprouts but would still allow for shade tolerant species such as black gum to remain part of the stand. Poor form and stunted growth are often an issue for suppressed oaks; however, oaks in this diameter class would sprout well. Poorly formed trees of these preferred species that are smaller in diameter would be cut to encourage sprouting. The sprouts would provide a centralized stem that has better quality potential (stem form) than the initial stem and would grow faster than the original stem.

In this alternative, 2 units totaling approximately 38 acres would be thinned by a commercial timber sale. The residual trees within these thinned units are expected to respond with an increase in annual growth rates and a concurrent increase in vigor. Thinning around vigorous oaks and other mast-bearing trees would expand their crowns, increasing hard mast production in the long-term. Increased sunlight to the forest floor is expected to result in the establishment of additional low vegetation consisting of herbaceous ground cover, woody shrubby species, and/or tree species. Ultimately a multi-layered canopy is expected to develop.

The 2 prescribed burn areas, Brush Mountain approximately 1,239 acres and Crabtree Meadows approximately 194 acres, would consume vegetation in the ground, shrub and mid-story layer of the treated forested stands and reduce the overall fuel load of the burn block. The low intensity of the planned prescribed burn is not expected to create large canopy gaps within the treatment area. However, individual or groups of trees scattered within the burn block may die and allow an increase in sunlight to reach the forest floor. A new flush of vegetation is expected to be created on the forest floor after the burn is implemented. Oak regeneration is expected to be aided in harvest Unit #4 as the burn would consume logging slash and non-fire resistant species such as striped maple, black gum, and sassafras.

The following table describes the how the percent and acreage of desired, existing and future stage and structure by ecosystem group could change in the project area after the implementation of alternative 1, versus staying in the existing condition (or alternative 2).

**Table 5. Desired, Existing, and Future (Alternative 1) Stage and Structural Conditions by Ecosystem Group for the Piney River Project Area**

Ecosystem Group	Approximate acres in Project Area	<b>Desired</b> % and acres in <b>Early</b> Stage and Structure	Alternative 2 <b>Existing</b> % and acres in <b>Early</b> Stage and Structure	Alternative 1 <b>Future</b> % and acres in <b>Early</b> Stage and Structure	<b>Desired</b> % and acres in <b>Mid/Late Open</b> Stage and Structure	Alternative 2 <b>Existing</b> % and acres in <b>Mid/Late Open</b> Stage and Structure	Alternative 1 <b>Future</b> % and acres in <b>Mid/Late Open</b> Stage and Structure
Cove Forests	1,122 acres	4-6% or 45-67 acres	1% or 10 acres	Additional 2% or 18 acres (Total for project area would be 3% or 28 acres)	6-12% or 67-135 acres	Less than 1% or 9 acres	--
Oak Forests and Woodlands	4,275 acres	9-11% or 385-470 acres	Less than 1% or 32 acres	Additional 2% or 77 acres (Total for project area would be 3% or 109 acres)	60-70% or 2,565-2,992 acres	2% or 64 acres	Additional 1% or 38 acres (Total for project area would be 3% or 102 acres)
Northern Hardwoods	161 acres	5-7% or 8-9 acres	1% or 2 acres	--	8-12% or 13-19 acres	3% or 5 acres	--
Other Groups (Glades & Wetlands)	24 acres*	--	--	--	--	--	--
<b>Total</b>	5,582 acres	438-546 acres	44 acres	137 acres	2,645- 3,146 acres	78 acres	102 acres

\*The Forest Plan does not include desired forest structure conditions for glades or wetlands.

## **Alternative 2 (No Action)**

Alternative 2 is the no action alternative. Stand stage, structure and ecosystem group or species composition would not be altered by timber harvest. Management Area Prescription 13 desired conditions for early stage and structure and mid/Late open stage and structure would not be met with this alternative. Natural processes of forest succession would not be interrupted. No regeneration would occur from human activities under this alternative. Shade tolerant species in the understory would continue to grow. The establishment and growth of adequate regeneration of hard mast species such as oak and hickory which are less tolerant of shade, would be dependent upon natural processes such as a catastrophic blowdown event, intense wildfire, or other naturally occurring events that would open the forest canopy. Adequate regeneration within the proposed regeneration units under the no action alternative is neither predictable nor expected. Over the long-term, these gap dynamics would move the stands from an oak dominated stand, to favor more shade tolerant species in the overstory such as red maple, black gum and white pine. On sites of better quality (site index 70 and above for oak) the forest composition is expected to shift toward red maple and yellow poplar as the oak dies out. This would not be expected to happen for another 100 years or more as natural succession occurs.

### Cumulative Impacts on Forest Vegetation

In November 2016, the Mount Pleasant Wildfire occurred and impacted the southern portion, approximately 675 acres, of the Piney River Project Area, but does not overlap with any of the harvest units.

In 2011, 2014, and 2017 the Tar Jacket prescribed burns overlapped approximately 200 acres in the southwest corner of the Piney River Project Area where the 90 acre proposed old field habitat enhancement is located.

The impacts of all past actions are represented by the existing situation as far as vegetation is concerned. Reasonably foreseeable actions in the project area would be continued control of NNIS primarily through chemical means. The decision allowing the treatment of NNIS is covered under a Forestwide Programmatic EA (Non-Native Invasive Species Control EA) and is not part of this decision, only the analysis of cumulative effects. See the discussion of Native and invasive plants elsewhere in this document for more detail.

No additional harvest activities are expected in the analysis area in the foreseeable future. No present or reasonably foreseeable actions on privately held lands are expected. Therefore, all cumulative effects have been disclosed in the discussion above.

## **Old Growth**

### Issue Related to the Resource

Timber harvesting and temporary road construction may impact portions of stands identified as old growth during field surveys. Thinning treatments have been proposed in locations that contain small old growth patches.

### Methodology and Scope of the Analysis

As directed by the Forest Plan (via the clarification letter signed in July of 2015 to resolve a Forest Plan appeal): “any proposal to manage old growth will analyze the contribution of identified patches to the representation, distribution, and abundance of the specific forest type within the old growth community classifications and the desired condition of the appropriate prescription”. The Forest Plan does not specify the precise criteria for the adequate representation, distribution, and abundance of all specific forest types within old growth forest community types (OGFCT) 21 and 25 at relevant scales; therefore, those issues are to be resolved at project level analysis. This analysis intends to determine the context and intensity of impact from the proposed management of OGFCT 21 within the analysis area.

The Forest Plan establishes a network or inventory of old growth areas through allocation of management prescription areas, identification of lands unsuitable for timber production, and the current distribution of older-aged stands across the Forest. The old growth analysis for this project mirrored the methodology of the old growth analysis completed for the Forest Plan which outlines existing, possible, and future old growth categories. The Little Piney River- Piney River 6<sup>th</sup> level watershed, totaling 30,534 acres, was utilized as the boundary for the analysis (*Figure 6- Old Growth Patch Size Distribution map*). Old growth determinations for existing, possible and future acreages were also grouped by OGFCT and forest type (see table below).

**Table 6. Old growth forest community types and associated forest types**

<b>Old Growth Forest Community Type</b>	<b>Forest Type</b>
1 - Northern Hardwood Sugar maple	Sugar maple-Beech-Yellow birch (81)
5- Mixed Mesophytic	Cove hardwood-White pine-Hemlock (41), Yellow poplar (50), Yellow poplar-White oak-Red oak (56), Sweet gum-Yellow poplar (58), Black cherry (70), Black walnut (82)
21- Dry-Mesic Oak	Chestnut oak (52), White oak-Red oak-Hickory (53), White oak (54), Northern red oak (55), Scarlet oak (59), Chestnut oak Scarlet oak (60)
25 – Dry and Dry –Mesic Oak Pine	Upland hardwood-White pine (42), Chestnut oak-Scarlet oak-Yellow pine (45), Bottomland hardwood-Yellow pine (46), White oak-Black oak-Yellow pine (47), Northern red oak-Hickory-Yellow pine (48)
2a, 2b, 2c - Conifer Northern Hardwood	Red pine (2), White pine (3), White pine-Hemlock (4), Hemlock (5), Fraser fir (6), Red spruce-Fraser fir (7), Hemlock-hardwood (8), White pine-Cove hardwood (9), White pine-Upland hardwood (10), Red spruce- Northern hardwood (17)

The recently completed George Washington and Jefferson National Forests Monitoring and Evaluation Report (M&E Report) for fiscals years 2015 – 2019 includes updated modeled acreages of possible and future old growth by old growth forest community types on page 18 – 19 (Table 7) for the George Washington National Forest (located at [George Washington & Jefferson National Forests - Land & Resources Management \(usda.gov\)](https://www.usda.gov/land-resources/forest-management/george-washington-jefferson-national-forests-land-resources-management)). The report provides a contextual backdrop for the effects analysis of this project. The possible and future old growth as identified in the M&E Report outlines that old growth forest community type 21, which is the type proposed for management, has increased by approximately 80,000 acres since 2004.

### *Survey to Determine Existing Old Growth*

Existing old growth within proposed treatment units was identified through survey efforts utilizing the revised protocol issued in March 2016. Old growth likely exists in other areas of suitable management prescriptions not accounted for in the modeled possible acreages in this analysis below, therefore the full existing old growth acreages are likely greater than disclosed in this analysis.

### *Determining Possible Old Growth*

Possible old growth includes forest stands within the project area which meet the preliminary inventory criteria (Table B-1 from the Forest Plan Appendix B, page B-2) from the Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region, Forestry Report R8-FR 62, 1997 (Old Growth Guidance). Field Sampled Vegetation (FSVeg) GIS data informed this analysis. See Table 7 below for excerpted pertinent information from Table B-1 in the Forest Plan Appendix B. Although not all of the stands would likely meet all criteria for existing old growth, this is the best estimate of the acreage and location of possible old growth in the project area. The determination of a stand's status as existing old growth as defined by the Old Growth Guidance is based on age, past disturbance, basal area, and tree size. Although, only age is used to determine possible old growth.

The Forest Plan management prescriptions included in the old growth analysis area that contribute to possible old growth include 7B- Scenic Corridor and Watershed and 13- Mosaics of Wildlife Habitat. The project area contains and is largely surrounded by areas that are designated in the Forest Plan as unsuitable management prescriptions, such as the Mt. Pleasant National Scenic Area.

**Table 7. Old growth community types and minimum age classes for possible old growth eligibility**

<b>Old Growth Forest Community Type</b>	<b>Minimum Age of the Oldest Class*</b>
1 - Northern Hardwood Sugar maple	100
21- Dry-Mesic Oak	130

2a, 2b, 2c - Conifer Northern Hardwood	140
5 – Mixed Mesophytic	140
25- Dry and Dry-Mesic Oak-Pine	120

\*Minimum age class as identified utilizing FSVeg data was the only criteria utilized to determine the possible future old growth acreages below, Table 9.

### *Determining Future Old Growth*

Future old growth is defined in the Forest Plan as stands or patches that may, or may not, currently meet the operational definition for existing old growth, but are allocated to management prescription areas that will not allow timber harvest (unsuitable) and thus allow the stands to mature and develop old growth attributes.

### Existing Situation

#### *Existing Old Growth*

The GWJ utilizes the Forest Plan operational criteria for determining existing old growth (Appendix B, Table B1) when planning vegetation treatments. Pursuant to Forest Wide Standard FW-85, an inventory was conducted on all stands proposed for harvest, as well as the temporary road locations, for existing old growth conditions. The results of the survey yielded that portions of harvest unit #s 1, 3, and 6 contain patches that met the operational criteria for old growth type 21 – dry-mesic oak. Variable retention is proposed for the entirety of Unit 1, and the old growth portions of Units 3 and 6. The results of the old growth surveys are located in the project planning record. The table below provides a summary of the units where old growth resources have been identified within stands proposed for harvesting. 25 acres of old growth were identified within the harvest stands. The identified patches total 44 acres, as they extend past the harvest unit boundaries. The total acreage of old growth in Units 1, 3, and 6 was found to be less than originally estimated in the Draft EA. Additional field work and GIS mapping processes cumulatively led to more accurate refined acres that reflect conditions on the ground (see *Figure 7- Existing Old Growth map*).

**Table 8. Old Growth Community Types Identified in Harvest Units**

Unit Number	Comp/Stand	Forest Type	Old Growth Type	Approximate Acres (in harvest unit)	Total Acres
1	1168/8	55 (northern red oak)	Type 21 dry mesic oak	12	23
3	1178/70	52 (chestnut oak) 53 (white oak, n.red oak-hickory) 55 (northern red oak)	Type 21 dry mesic oak	1	6
6	1177/17	53 (white oak, n.red oak-hickory) 55 (northern red oak)	Type 21 dry mesic oak	12	15

### *Possible Old Growth*

As outlined in the methodology section above, the possible old growth acreages were derived from FS Veg data. Possible old growth was determined by first screening for suitable management prescriptions (7B and 13 in the project area) and then screened by the specific age minimums based on the old growth forest community type. This summary is outlined in Table 9 below (see *Figure 8- Possible Old Growth map*).

**Table 9. Possible old growth by Forest Community Type and Forest Type for the Piney River Project Area**

<b>Old Growth Forest Community Type</b>	<b>Forest Type Code</b>	<b>Forest Type</b>	<b>Acres</b>	<b>Total Acres for Each Forest Community Type</b>
1 - Northern Hardwood Sugar maple	81	Sugar maple-beech-yellow birch	15	
<b>TOTAL for 1 – Northern Hardwood Sugar maple</b>				<b>15</b>
21- Dry-Mesic Oak	52	Chestnut oak	550	
	53	White oak-northern red oak-hickory	406	
	55	Northern red oak	135	
<b>TOTAL for 21 – Dry Mesic Oak</b>				<b>1091</b>
2a, 2b, 2c - Conifer Northern Hardwood	8	Hemlock-hardwood	21	
<b>TOTAL for 2a, 2b, 2c - Conifer Northern Hardwood</b>				<b>21</b>
5 – Mixed Mesophytic	56	Yellow poplar-white oak-northern red oak	216	
<b>TOTAL for - 5 – Mixed Mesophytic</b>				<b>216</b>
<b>TOTAL Acres Possible Old Growth</b>				<b>1,343</b>

### *Future Old Growth*

As outlined in the methodology section above, the future old growth acreages were derived from FS Veg data. Future old growth was determined by screening for unsuitable management prescriptions (12D Remote Backcountry, 1A Designated Wilderness, 4A Appalachian National Scenic Trail Corridor, 7E1 Dispersed Recreation Areas (unsuitable), 4D Special Biological Area, 5B Designated Communication Site, 4F Mount Pleasant National Scenic Area, and an Inventoried Roadless Area in the project area). This summary is outlined in the table below (see *Figure 9- Future Old Growth map*).

**Table 10. Future old growth by Forest Community Type and Forest Type for the Piney River Project Area**

Old Growth Forest Community Type	Forest Type Code	Forest Type	Acres	Total Acres for Each Forest Community Type
1 - Northern Hardwood Sugar maple	81	Sugar maple-beech-yellow birch	54 acres	
TOTAL for 1 – Northern Hardwood Sugar maple				54 acres
21- Dry-Mesic Oak	52	Chestnut oak	2824 acres	
	53	White oak-northern red oak-hickory	2069 acres	
	55	Northern red oak	1013 acres	
	59	Scarlet oak	15 acres	
	60	Chestnut oak-scarlet oak	1 acres	
	80	Upland oak	125 acres	
TOTAL for 21 – Dry Mesic Oak				6,047 acres
25 – Dry and Dry – Mesic Oak Pine	42	Upland hardwoods-white pine	46 acres	
	48	Northern red oak-hickory- yellow pine	14 acres	
TOTAL for 25 – Dry and Dry –Mesic Oak Pine				60 acres
2a, 2b, 2c - Conifer Northern Hardwood	3	White pine	11 acres	
	8	Hemlock-hardwood	26 acres	
TOTAL for 2a, 2b, 2c - Conifer Northern Hardwood				37 acres
5 – Mixed Mesophytic	50	Yellow poplar	500 acres	
	56	Yellow poplar-white oak-northern red oak	3889 acres	
	70	Black cherry	93 acres	
TOTAL for - 5 – Mixed Mesophytic				4,482 acres
TOTAL Acres Future Old Growth				10,680 Acres

*Old Growth Patch Size Distribution*

The Little Piney River- Piney River 6<sup>th</sup> level watershed boundary utilized for the analysis encompasses 30,534 acres, approximately 15,852 acres of which are Forest Service land. Aside



from the existing, possible, and future old growth areas, the remainder of Forest Service land in the watershed is comprised of suitable management prescriptions that are identified in FS Veg to have age classes lower than would designate them as old growth per their old growth forest community type. These acres are accounted for below as “not identified”. Within the unidentified acreage, there could be old growth acres that exist, but were not identified as part of this effort either due to potential errors or inaccuracies in the FS Veg data or lack of old growth surveys outside of the proposed harvest units.

**Table 11. Summary of acreages for the identified analysis area**

<b>Old Growth Type</b>	<b>Acres</b>
Not identified	3,804 acres
Existing	44 acres
Possible	1,343 acres
Future	10,680 acres
<b>Total Analysis Area</b>	<b>15,852 acres</b>

Existing, possible, and future old growth patches across the analysis area were grouped by old growth forest community type and patch size (see *Figure 6- Old Growth Patch Size Distribution Map*). The table below shows the approximate acreage for each old growth type, patch size, and the forest types it is comprised of. The majority of the analysis area consists of medium-sized patches of future old growth (approximately 10,143 acres). These areas are comprised entirely of unsuitable management prescriptions and will continue to mature and develop old growth attributes into the future.

**Table 12. Old Growth Patch Sizes by Forest Type and Old Growth Forest Community Type**

<b>Old Growth Type</b>	<b>Patch Size</b>	<b>Old Growth Forest Community Type (OGFCT)</b>	<b>Number of Patches</b>	<b>Forest Type</b>	<b>Acres by Forest Type</b>	<b>Total Acres by OGFCT</b>
Existing	Small	21- Dry-Mesic Oak	3	52, 53, 55	44	44
<b>Total Acres Existing Small Patches</b>						<b>25</b>
Possible	Small	1 - Northern Hardwood Sugar maple	1	81	15	15
		2a, 2b, 2c - Conifer Northern Hardwood	1	8	21	21
		5 – Mixed Mesophytic	6	56	216	216
		21- Dry-Mesic Oak	34	55	92	-
				53	260	-
				52	304	656
<b>Total Acres Possible Small Patches</b>						<b>908</b>
	Medium	21- Dry-Mesic Oak	1	55	43	-
				53	145	-
				52	247	435
<b>Total Acres Possible Medium Patches</b>						<b>435</b>

Future	Small	1 - Northern Hardwood Sugar maple	3	81	54	54
		2a, 2b, 2c - Conifer Northern Hardwood	2	3	11	-
				8	26	37
		5 – Mixed Mesophytic	15	50	47	-
				56	206	-
				70	93	346
		21- Dry-Mesic Oak	4	52	30	-
				53	9	-
				60	1	40
		25- Dry and Dry-Mesic Oak-Pine	2	42	46	-
				48	14	60
Total Acres Future Small Patches						537
	Medium	5 – Mixed Mesophytic	6	50	454	-
				56	3,682	4,136
		21- Dry-Mesic Oak	5	52	2,794	-
				53	2,060	-
				55	1,013	-
				59	15	-
				80	125	6,007
Total Acres Future Medium Patches						10,143

## Direct and Indirect Effects

### **Alternative 1 (Modified Proposed Action)**

As stated above, portions of 3 stands proposed for harvest met the operational criteria for old growth forests for old growth type 21-Dry Mesic oak forest type. Currently, there are approximately 207,224 acres of possible OGFCT 21 on the GWNF and over 50% of it is located in unsuitable management prescriptions and will maintain the old growth character. Additionally, this old growth type is well-distributed around the GWNF. Of the 110 6th level watersheds that contain more than 1000 acres of National Forest System lands, 91% have possible OGFCT 21 that is unsuitable for timber production (Forest Plan. 2014. Appendix B. Old Growth Strategy. B-6).

The three areas of old growth included in the proposed harvest units are forest types 52 (chestnut oak), 53 (white oak, n.red oak-hickory), and 55 (northern red oak). These are all subset forest types of OGFCT 21. As outlined in Table 10, there are 2,824 acres of forest type 52, 2,069 acres of type 53, and 1,013 acres of type 55 quantified as future old growth. Additionally, there are 550 acres of type 52, 406 acres of type 53, and 135 acres of type 55 possible old growth in the project area. Each of these forest types are abundant and well-represented in the analysis area in varying patch sizes within the possible and future old growth categories. While forest type 55 is not represented in the small patch size category for future old growth, this type is well-represented in the analysis area overall as future medium-sized old growth patches, as well as possible small and medium-sized patches. As explained in the methodology, these numbers were derived from polygon spatial data. Overall, forest type 55 is well-represented across the analysis area, with approximately 10% of the existing, possible, and future old growth in the project area designated as such. Forest types 52 and 53 have even higher numbers of representation in the small and medium old growth patches, each representing approximately 28% and 21% of all forest types within the analysis area.

Spatially, OGFCT 21(which contains forest types 52, 53 and 55) is evenly distributed across the analysis area, with contiguous medium-sized patches connecting to unsuitable future old growth areas that extend past the analysis area, such as the Mount Pleasant Scenic Area. Additionally, possible small patches of OGFCT 21 are well-distributed throughout the center of the project area and serve to connect the medium patches. As illustrated in the maps, the distribution of varying old growth patch sizes and forest types within OGFCT create a connected matrix between the small and medium patches.

In recognition of these older age trees and small patches within a historically altered landscape (resulting from fire exclusion and past mining and timbering activities), a modified treatment would be implemented to restore some of the structural attributes characteristic of late open canopy oak woodlands. Additionally, these modified treatments will meet our goal to enhance habitat for species of concern. For these three stands, the silvicultural prescription would be modified as follows:

- In areas of each stand where the old growth criteria was met by survey protocol, a higher basal area (40-90 sqft) would be retained via variable retention harvesting methods.

There are opportunities to use these forest management practices to mimic the structure and natural disturbance regime of old-growth forests to enhance habitat for Cerulean Warblers. Cerulean Warblers are a locally rare migratory bird species that exist in the project area and surrounding vicinity. Group selection harvest methods and thinning harvest methods that retain 40-90 basal area, both of which favor oak species, can provide for a diverse canopy and understory structure. Such conditions may help to advance stands toward a late open successional structure that would benefit many avian species, including Cerulean warblers.

Following treatment, Unit 1 would have an overall residual basal area of 40-90 square feet/acre. Units 3 and 6 contain 1 and 12 acres of old growth, respectively, and each would retain a residual basal area of 40-90 square feet/acre in areas with identified old growth. However, the overall average residual basal area across Units 3 and 6 would be between 30-40 square feet/acre, which would be more aligned with a shelterwood with reserves regeneration harvest. The proposed treatment will not result in the age class being reset for areas containing old growth.

As previously stated in this analysis, the small patches of old growth identified in the harvest units extend beyond the boundaries of the proposed timber harvest areas (see *Figure 7- Existing Old Growth Map*), and these areas will remain unaffected by the proposed action. The continuation of these old growth patches outside of the management units would maintain their characteristics as small old growth patches containing forest types 52, 53, and 55. However, it is unlikely that the old growth portions proposed for thinning will retain old growth character by definition. This would likely be due to the lack of trees per acre remaining in residual stand that meet age and diameter breast height (DBH) requirements per the protocol. While these small areas would likely lose their old growth character by definition, they would align with the departure analysis and desired future condition which recognizes the need for and lack of late open structure across the forest (GWNF Forest Plan).

Guidelines for the selection of trees that would compose the residual basal area would include: wildlife den trees that are hollow or have cavities, shagbark hickory, sugar maple, mature black gum and older hardwood mast species (primarily oaks with an emphasis on white oak and chestnut oak) that exhibit mature large crowns.

In a larger forest context, old growth forest community type 21 had an average annual increase of approximately 5,319 acres across the forest between 2004 and 2019. This consistent upward trend across the forest far outpaces the proposed management of old growth within the project area. The 25 acres proposed for thinning in the project area comprises only .01% of the most recent total from 2019 for possible and future OGFCT 21 across the GWNF.

As stated above, the Forest Plan does not specify the precise criteria for the adequate representation, distribution, and abundance of all specific forest types within old growth forest community type 21 at relevant scales; therefore, those issues are to be resolved at project level analysis. The above effects analysis aims to demonstrate that, given the context, size and intensity of the actions proposed from this project, OGFCT 21 and forest types 52, 53, and 55 will not be significantly impacted. OGFCT 21 and forest types 52, 53 and 55 have adequate

representation, abundance, and distribution across the project area such that the patches proposed for treatment would not be necessary to contribute to the Forest old growth inventory.

### Alternative 2 (No Action)

No potential impact to existing or future old growth would occur under this alternative. Stands would continue to age and move toward an old growth condition.

### Cumulative Effects

There are no additional activities planned in the reasonably foreseeable future which, when combined with past activities and the projects proposed within these alternatives, would have a significant cumulative effect on old growth forests in the area.

Figure 6. Old Growth Patch Size Distribution Map

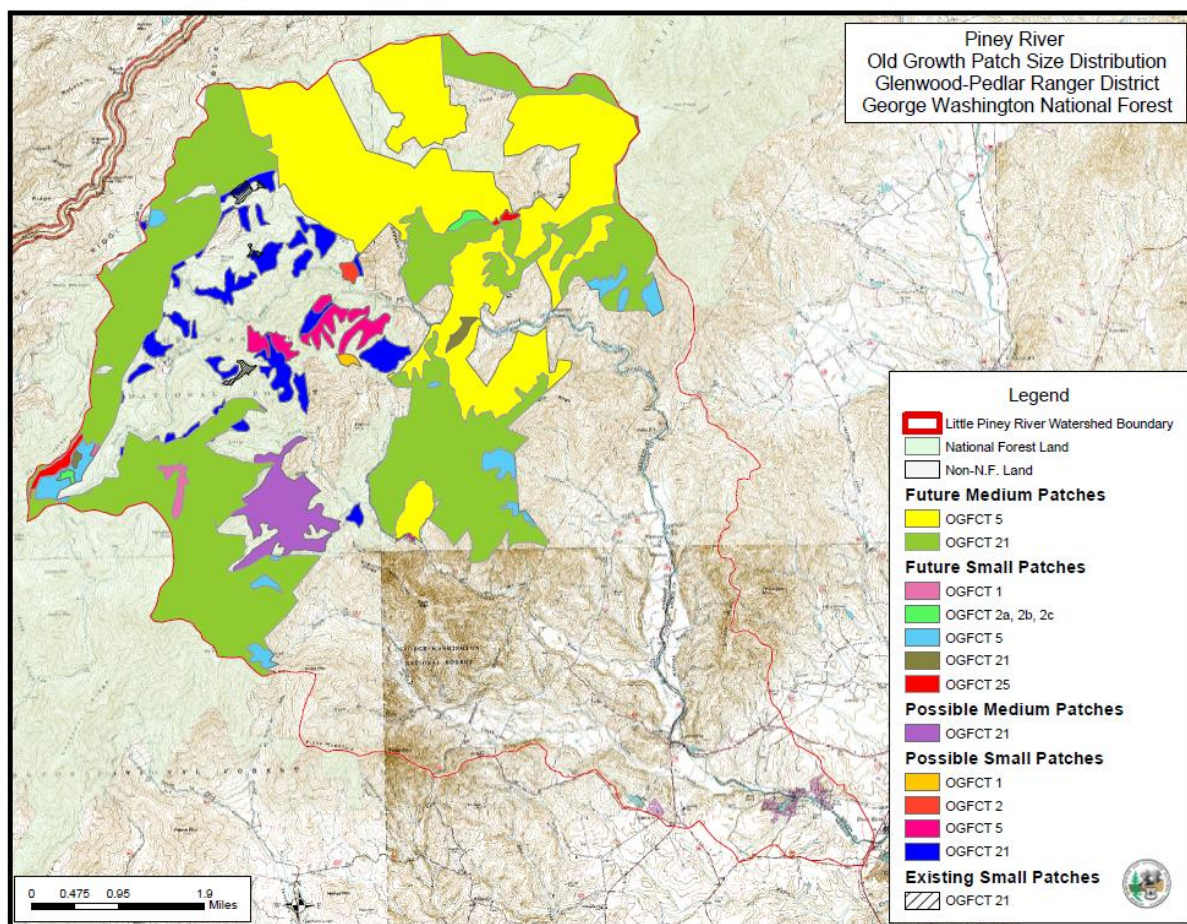
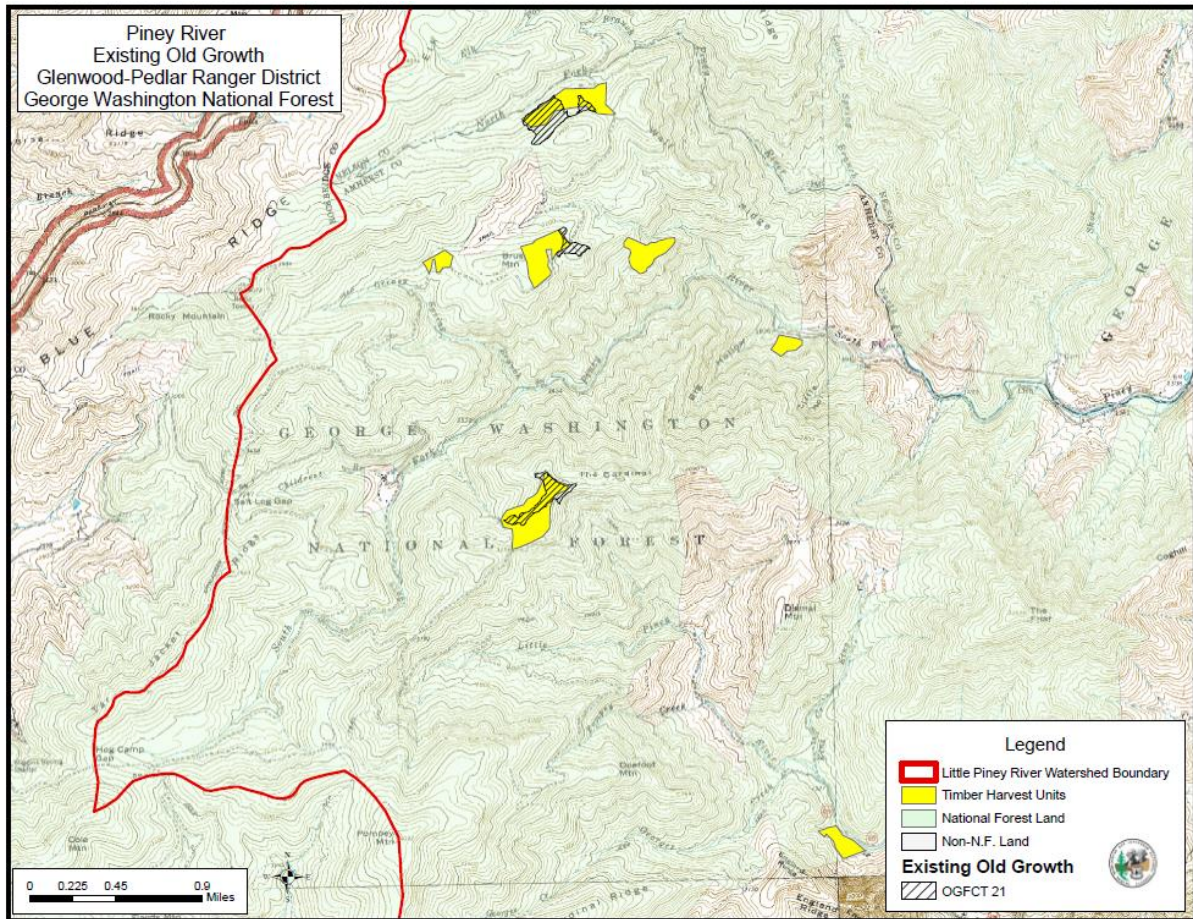
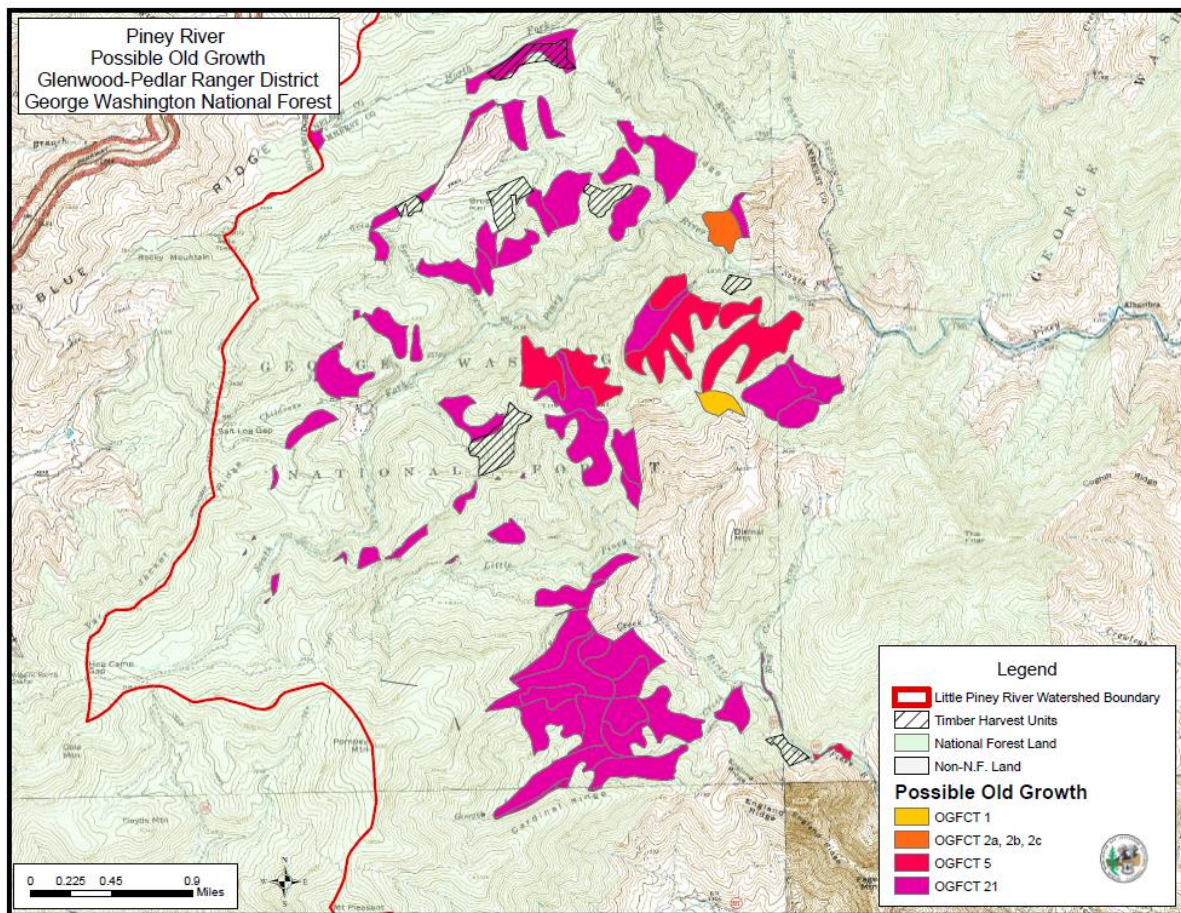




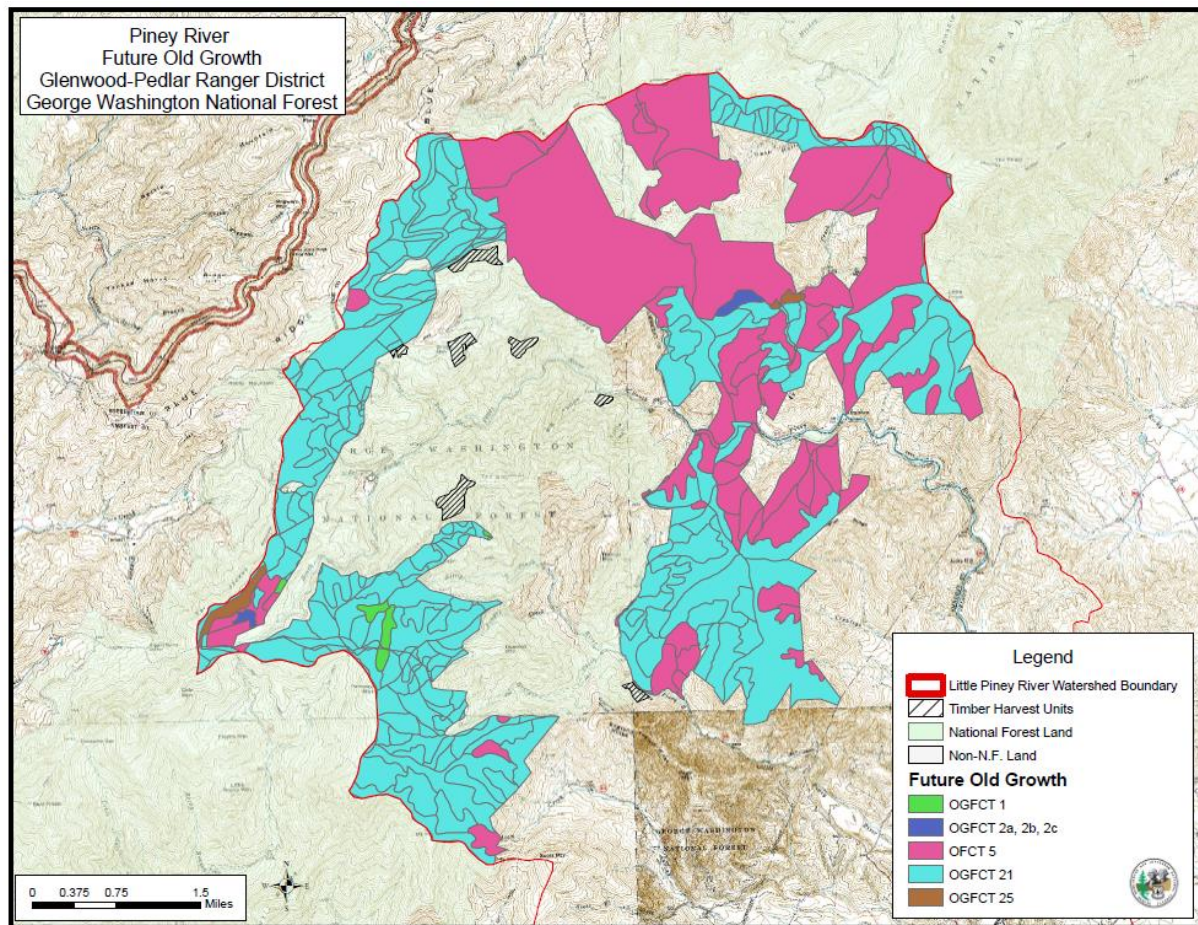
Figure 7. Existing Old Growth Map



**Figure 8. Possible Old Growth Map**



**Figure 9. Future Old Growth Map**



## Non-Native Invasive Plant Species

### Issue Related to the Resource

Timber harvesting and temporary road construction may aide in the establishment and spread of non-native invasive weeds.

### Scope of the Analysis

The scope of the analysis includes areas within and immediately adjacent to the harvest units, constructed temporary road locations, and existing Forest Service system roads within the project area.

### Existing Situation

According to the Forest Plan, NNIS threaten the integrity of native ecosystems on the George Washington National Forest. The Regional Forester's Non-Native Invasive Plant Species list



(Table 13) has identified potentially troublesome non-native plant species. Category 1 species are known to be invasive and persistent throughout all or most of their range within the Southern Region.

A survey for non-native invasive species was conducted in the Piney River Project Area. Several non-native invasive species were found to some extent in and adjacent to the proposed harvest units, areas of proposed temporary road construction, and along existing roads. Many of these species are sun-loving plants that require sunlight to grow and flourish.

**Table 13. Predominant Non-native Invasive Plant Species Present in Project Area**

<b>Regional Forester Rank</b>	<b><i>Genus species</i></b>	<b>Common name</b>	<b>Ecology/Habitat</b>
1	<i>Ailanthus altissima</i>	Tree of Heaven	Rapid growing, forms thickets and dense stands. Colonizes by root sprouts and spreads by prolific wind and water dispersed seeds. Viable seed can be produced by 2 and 3 year-old plants. Shade intolerant.
1	<i>Elaeagnus umbellata.</i>	Autumn Olive	Prefers drier sites. Spreads by animal-dispersed seeds and found as scattered plants in forest openings and open forests, (shade tolerant) eventually forming dense stands.
1	<i>Microstegium vimineum</i>	Japanese Stiltgrass	Flourishes on alluvial floodplains and stream sides. Also common at forest edges, roadsides, and trail sides, and along ditches.
1	<i>Alliaria petiolata</i>	Garlic Mustard	Occurs under forest canopies and is shade tolerant. Also, grows at forest margins and openings.
1	<i>Rosa multiflora</i>	Multiflora rose	Is tolerant of a wide range of soil and environmental condition. The plant frequently colonizes roadsides, old fields, pastures, prairies, savannas, open woodlands, forest edges, and it can invade dense forests where the canopy has been opened due to disturbance.
1	<i>Polygonum perfoliatum L</i>	Mile-a-minute	Establishes and grows best in moist, sunny locations with an abundance of plant litter such as leaves, duff, or brush on the soil. Slash and woody debris piles left at log landings are ideal growing sites for mile-a-minute.
Not Ranked	<i>Paulownia tomentosa</i>	Paulownia	Species identified as troublesome by VA Dept. Conservation. Common around old home sites, roadsides, riparian areas, and forest margins. Infrequently planted in plantations. Spreads by wind and water dispersed seeds. Invades after fire, harvesting, and other disturbances. Forms colonies from root sprouts. Relatively short-lived.

### Direct and Indirect Effects

### **Alternative 1 (Modified Proposed Action)**

The potential to introduce or increase the presence of invasive non-native weeds in this project area is related to the amount of acres harvested and acres burned. Tree-of-Heaven, one of the more prevalent NNIS in the project area does not need full sunlight to establish itself. It is a windborne seed that can become established in partial shade. While individuals of Tree-of-Heaven and other NNIS tree, shrub and vine species may become established and/or grow in the harvest units, they are not expected to dominate the stand, nor are they expected to comprise a significant component of the stands. If they were to gain a foothold in the stands, many would eventually be shaded out by competing native species. Ultimately, the forest composition in these stands would not be changed significantly.

While autumn olive, garlic mustard, and *Microstegium* are all shade tolerant species, they have not become a serious problem in regards to spreading through the general forest and are associated with the road system including the road sides and roadbed itself. Some of these species became established in the area because of early management's use of these species for erosion control and wildlife habitat improvement. Pre-haul and post treatment of the roadside edges within the project area would reduce the potential of spread of existing populations of NNIS plants. The spread of these types of invasive species can also be reduced by quickly seeding disturbed areas with non-invasive species or the use of native grasses and wildflowers beneficial as wildlife foods. Also, the potential spread and establishment of NNIS can be reduced with the mitigation measure of requiring off-road logging equipment to be weed free before entering onto National Forest ownership.

### **Alternative 2 (No Action)**

In this alternative, no harvesting would occur. The establishment and spread of non-native invasive species has and can continue to occur through the creation of canopy gaps that result from natural tree mortality or catastrophic natural events. Non-native species along the roadsides may still continue to be treated as part of the normal District program of work under the decision space of the Forestwide Non-Native Invasive Plant Control EA (USDA 2010).

### **Cumulative Effects**

Based on the discussion above and the known amount of NNIS in the project area this project would not result in a significant long term infestation of invasive species. To reduce the risk of the establishment and spread of invasive species, mitigation measures and Forest Plan standards (design criteria) would be followed. The pre-treatment of forest roadsides and proposed temporary road construction locations within the Piney River Project Area would also reduce the risk of the establishment and spread of invasive plants within the project area. NNIS such as Tree of Heaven, Royal Paulownia and mile-a minute would be treated with a foliar spray or dormant stem injection method of glyphosate, triclopyr or imazapyr along haul roads prior to project implementation. The treatment of NNIS with herbicide is covered in the Forestwide Non-Native Invasive Plant Control EA (USDA 2010). Otherwise, there are no past, current, or reasonably foreseeable future activities planned in the project area that, when combined with the proposed

action, would have a significant cumulative effect on the establishment and spread of non-native invasive plants.

## **Successional Forests and Associated Management Indicator and Demand Species**

### Issue Related to the Resource

None

### Existing Condition

An abundance and variety of wildlife species exist in the habitat types found in the Piney River project area, which is typical for those habitat types across the George Washington National Forest. During field surveys wildlife seen or detected include black bear, white-tailed deer, wild turkey, ruffed grouse, pileated woodpecker, ovenbird, cerulean warbler, worm-eating warbler, wood thrush, gray squirrel, red-tailed hawk, barred owl, common raven, American crow, white-breasted nuthatch, eastern tufted titmouse, downy and hairy woodpeckers, red-eyed vireo, eastern wood peewee, hooded warbler, acadian flycatcher, eastern box turtle and wood frogs.

### **Forest Management Indicator Species (MIS)**

Management indicator species (MIS) are to be selected “because their population changes are believed to indicate the effects of management activities” (36 CFR 219 (a) (1)). They are to be used during planning to help compare effects of alternatives (36 CFR 219.19(a) (2)), and as a focus for monitoring (36 CFR 219.19(a) (6)). Where appropriate, MIS shall represent the following groups of species (36 CFR 219 (a) (1)):

- Threatened and endangered species on State and Federal lists;
- Species with special habitat needs;
- Species commonly hunted, fished, or trapped;
- Non-game species of special interest; and
- Species selected to indicate effects on other species of selected major biological communities.

The following table contains a listing of the MIS occurring within the project area that would be used to analyze effects on wildlife habitats for the Piney River Vegetation Project.

**Table 14. Selected MIS Species of the George Washington Forest Plan**

<b>Common Name</b>	<b>Category</b>	<b>Reason for Selection</b>
<b>Ovenbird</b>	Special Habitat Indicator	Indicates the effectiveness of management in maintaining desired conditions relative to forest interior habitat within mature mesic deciduous forests

<b>Chestnut-sided Warbler</b>	Special Habitat Indicator	Indicates effectiveness of management in achieving desired conditions within high elevation early successional habitats
<b>Eastern Wild Turkey</b>	Demand Species Indicator	Trends in harvest levels and hunting demand will be used to indicate effectiveness of management in meeting public demand for this species
<b>Black Bear</b>	Demand Species Indicator	Trends in harvest levels and hunting demand will be used to indicate effectiveness of management in meeting public demand for this species
<b>Deer</b>	Demand Species Indicator	Trends in harvest levels and hunting demand will be used to indicate effectiveness of management in meeting public demand for this species

Discussion of MIS will focus on the expected impact to each species as it relates to the modified proposed action (alternative 1) and the no action alternative (alternative 2).

### Successional Stages

Successional stages of forests are the determining factor for presence, distribution, and abundance of a wide variety of wildlife. Some species depend on early successional (young forests), some depend on late successional (older forests), and others depend on a mix of both occurring within the landscape (Franklin 1988; Harris 1984; Hunter et al. 2001; Litvaitis 2001). These habitat conditions are also important as wintering and stopover habitats for migrating species (Kilgo 1999; Suthers 2000; Hunter et al. 2001). Additionally, mid and late successional oak forests and woodlands provide a critical wildlife food source of hard mast. The large diameter hollow trees and snags found in older oak forests are an important source of dens for black bears (Carlock et al. 1983).

Permanent herbaceous habitats are essential elements of early successional habitat for many wildlife species. They are used by a variety of wildlife, both game and non-game species for foraging, nesting, bedding down, bugging, and brood rearing. Maintained openings provide nutritious green forage in the winter and early spring and seeds during late summer and fall.

The project area currently consists of a forest matrix of structural conditions by ecological system group (shown in table 1 or 4 above) and consists of 5,583 acres.

### Hard Mast

The hard nutty fruit of oaks, hickory, beech, and chestnut trees are known collectively as hard mast. Hard mast provides a vital food source for many game and nongame wildlife including mice, voles, opossum, woodrats, rabbits, raccoons, foxes, quail, grouse, turkey, mallards, wood ducks, various woodpeckers, jays, nuthatches, titmice, towhees, among others. The high levels of fat and protein in hard mast help wildlife maintain fat stores critical to migration, winter survival, hibernation, and to the survival of young (NHFSSWT 1997). The MIS species black bear, whitetail deer, pileated woodpecker, and wild turkey rely heavily on mast production for survival and fitness. Hard mast is an especially critical energy source for winter survival and hibernation.

Providing potential sources of hard mast through time is an integral part of wildlife management on the George Washington National Forest (GWNF). Over 25% of the management indicator

species utilize hard mast as a seasonal food source. Many factors affect the production of mast including site productivity, crown and basal area, climate and site microclimate, genetics, among many other variables. In general, the timeframe of 40 and 100 years old represents the ages of optimal mast production in the timber types dominated by mast bearing trees (Burns and Honkala 1990, NHFSSWT 1997). These vigorous stands would become rarer as the Forest continually ages, without timber management and prescribed fire. Currently the GWNF has approximately 89% of forested stands in the mid-to-late successional class. Having a mosaic of stand ages across the landscape has long been a general strategy to ensure that consistent acorn crops for regeneration and wildlife forage are attained (Collins 1961). Harvesting of older oak-dominated stands within the project area would ensure that those stands would again be in optimal hard mast producing age in another 40 years assuming the proper silvicultural treatment method is utilized and unwanted stand conversion does not occur.

### MIS Species Indirect and Direct Effects

#### **Ovenbird**

Preferring mature, dry, deciduous hardwoods with a closed canopy, the ovenbird is an area sensitive MIS requiring relatively large undisturbed tracts. As ground nesters, they are especially vulnerable to predators. Breeding habitat is deciduous or mixed forest (rarely pure pine woods) with moderate understory, preferably in uplands. Minimum tract size is 37 acres, (Hamel 1992). It is common within the upland hardwood stands in the area. This species would be displaced from the regeneration harvest units. However, there is a large amount of forest interior habitat in the Piney River watershed and the adjacent Mount Pleasant National Scenic area that can provide needed habitat. In addition, prescribed burning and other silvicultural treatments are not expected to impact local populations. Local populations are expected to decline or be displaced for a 10-15 year period until the regeneration areas get older. On the Forest, overall total ovenbird populations are stable or increasing (USDA Forest Service, 2004).

No discernable direct or indirect effects to ovenbird population trends is expected from implementation of proposed project due to the high percentage of the Forest in mid to late-successional stages and the project area is surrounded by similar habitat.

#### **Chestnut-sided warbler**

The habitat of this common migrant warbler is typically found in second-growth hardwoods and overgrown fields in the Appalachian Mountains in Virginia, over 2,500 feet in elevation. On the Forest it is therefore found in the Blue Ridge, Ridge and Valley, and Cumberland mountains. It is most numerous in abandoned fields with scattered saplings, along woodland edges, and in open park-like deciduous woods. It nests 1 to 4 feet above the ground in saplings and shrubs and feeds on insects gleaned from leaves and twigs in deciduous vegetation (Hamel, 1992). The chestnut-sided warbler is an MIS for high-elevation early-successional habitats because of its strong association with these habitats, and because its populations should be responsive to forest management efforts that create and sustain such habitats. In conjunction with the proposed harvesting methods the use of prescribed fire may also result in some small patches of regeneration, especially where heavy fuels exist, which would benefit this species. Local populations would benefit the most from this proposed action, as it creates early seral habitat at

higher elevations adjacent to Tar Jacket ridge and Cole Mountain where chestnut-sided warbler populations are robust.

### **Eastern Wild Turkey**

The eastern wild turkey (*Meleagris gallopavo*) was selected as a MIS because it is a species commonly hunted and its population is of public interest. It is a species whose habitats may be influenced by proposed project activities. Wild turkeys use a wide range of habitats, with diversified habitats providing optimum conditions (Schroeder, 1985). This includes mature mast-producing stands during fall and winter, shrub-dominated stands for nesting, and herb-dominated communities, including agricultural clearings for brood rearing. Hard mast is an important winter food of the eastern turkey in the central Appalachians. Hens with broods use a variety of habitats: pastures, hay fields, wildlife clearings, power line rights-of-way, natural glades, and savannas. Well-distributed water sources, especially in brood habitat are also beneficial to turkeys (GWNF FEIS, 2014).

Habitat conditions for wild turkey are enhanced by management activities such as prescribed burning, thinning (Hurst, 1978; Pack et al., 1988), and the development of herbaceous openings (Nenno and Lindzey, 1979; Healy and Nenno, 1983). Structure of vegetation is as important as ground vegetation types (Healy 1985). For the eastern hardwood region, Wunz and Pack (1992) recommended maintaining 50 to 75% of the area in mast producing condition and approximately 10% in well distributed permanent grassland/shrublands and/or open woodlands, in addition to the early successional woody habitats that result from timber harvest and other activities. Forest thinning is recommended to enhance the herbaceous component of mid-successional forests. Eastern wild turkeys are present throughout the Region. Population densities generally are medium to high in the Northern Ridge and Valley, Allegheny Mountains, Northern Cumberland Mountains, and Southern Appalachian Piedmont Sections, and low to medium in the remainder of the SAA area (SAMAB 1996; VDGIF 2013). High population densities are associated with greater amounts of oak forest and cropland, and lesser amounts of developed and coniferous forestland. Wild turkey populations have expanded in range and density in the last 25 years. As with deer, this increase likely is related to both non habitat factors such as extensive restoration efforts, protection, and conservative harvest strategies as well as increased acorn capability resulting from the increase in mid-to late successional oak forests.

Wild turkey population trends are monitored by the Virginia Department of Game and Inland Fisheries (VDGIF) and West Virginia Division of Natural Resources (WVDNR). Population trends, in terms of harvest/square mile, vary over the years, but indicate an overall stable to decreasing trend in counties with GWNF lands.

Wild turkeys require a mixture of various successional stage habitats to meet their year-round habitat needs, as previously mentioned. Key requirements include the interspersed of mature mast producing forest during fall and winter, early successional woody habitat, and grassland, shrublands, and open woodlands, for nesting, brood range, and year-round foraging (Lafon et al. 2001; Norman et al. 2001; Steffen et al. 2002; VDGIF 2013).



Proposed project activities are unlikely to have direct effects on wild turkey (mortality), though significant indirect effects could be seen on wild turkey habitat quality, which would benefit the species. Early successional forest would be created by regeneration treatments, open woodland habitat would be created by thinning treatments, and grass/forb openings would be created as a result of seeding skid trails, haul roads and log landings. An increase in the acreage of habitat components important for wild turkey is projected in the short-term with creation of more ESH, and for the long-term with an increase in mast productivity in 40 years. Long-term wild turkey populations within the project area should be expected to remain stable and possibly increase slightly with implementation of the proposed action

## **Black Bear**

The black bear (*Ursus americanus*) was selected as a MIS because it is a species commonly hunted and its populations are of public interest. It is a species whose habitats may be influenced by proposed project activities. Black bears use a wide variety of habitats in the southern Appalachians, occurring on National Forests and National Parks of the Southern Blue Ridge, Northern Cumberland, and Allegheny Mountains and the Northern Ridge and Valley. These public lands in Virginia, West Virginia, North Carolina, Tennessee, and Georgia connect to form a forested landscape of over 6 million acres where bears are generally distributed at low to medium densities. The increase of older oak forests in this large block of habitat, along with increased protection and conservative hunter harvest, has allowed bear populations throughout the southeastern mountain region to moderately increase over the past 30 years (GWNF FEIS, 2014).

Black bears are opportunistic omnivores and consume a variety of seasonal plant and animal foods including flowering plants, grasses, various roots and tubers, and especially soft mast (grapes, berries, apples, etc.). Availability of hard mast (acorns and hickory nuts) is critical throughout the winter, and reproductive success can be closely related to this food source (Eiler 1981; Wathen 1983; Eiler et al. 1989, VDGIF 2013). Since bears utilize nearly any abundant plant or animal food, they are likely to thrive when a diversity of forest age classes and food sources are available. Mature forests with large diameter trees are a key habitat type that provides hard mast and hollow den trees for bears. Open woodlands and early successional forests are also important, due to the higher amounts of soft mast species in the under story available for bears to forage on (GWNF FEIS, 2014).

Bears den in a wide variety of sites, though in western Virginia and adjacent eastern West Virginia, nearly 70% of all den sites are in hollow trees (VDGIF 2013). Individual bears enter dens in Virginia and West Virginia as early as the end of October and as late as the beginning of January depending on mast availability (VDGIF 2013). Den emergence usually occurs in reverse order of den entrance. Females with cubs are the last to emerge from winter dens, typically between mid-March and mid-April.

Black bears are often found in large, contiguous tracts of forested lands, and smaller blocks of forested habitat that are linked by forested corridors. The black bears in western Virginia and eastern West Virginia belong to the largest contiguous bear population in the southeast and mid-Atlantic. Bear population status on the GWNF is monitored by the state agencies of Virginia and

West Virginia and uses a combination of indices derived from harvest, age structure, nuisance activity, and miscellaneous mortalities (VDGIF 2013; WVDNR 2013). Black Bear were observed, or evidence of their presence was noted during field surveys of project areas.

Bear would benefit somewhat from the proposed timber harvest and prescribed fire as a result of increased soft mast production from species such as grape, blueberry, blackberry, greenbrier and other species. Hard mast (acorns) production would not decline significantly in the project area, as a result of this harvest alone.

### **White –tailed Deer**

The white-tailed deer (*Odocoileus virginianus*) was selected as a MIS because it is a species commonly hunted and its populations are of public interest. White-tailed deer use a variety of habitat types, and is a species whose habitats may be influenced by proposed management activities. White-tailed deer prefer early successional forest areas, woodland edge, and a mosaic of various forest age classes. A mixture of habitat types and resulting edge ensures an abundant food source is available throughout the year. White-tailed deer heavily use hard mast in the fall (usually acorns) to accumulate sustaining fat reserves for the winter. During the winter woody browse makes up the majority of a deer's diet in the central Appalachians. In the spring and summer they consume young growing herbaceous plants, fruits, and woody shoots and leaves (GWNF FEIS, 2014). It is important to deer to have a diversity of hard mast producers, successional habitat for browse, and grasslands/shrublands, each being well distributed across the landscape to meet their year-round needs.

In addition to habitat quality, white-tailed deer populations can be regulated by other factors, such as predation and disease. In recent decades, both black bear and coyote populations have increased in the southern Appalachians, and are known to opportunistically prey on white-tailed deer, especially fawns (Knox 2011). The current and long-term impacts of these and other predators on the white-tailed deer population are unknown at this time (Knox 2011). Chronic Wasting Disease (CWD) was discovered in the wild deer population in Hampshire County, WV in 2005 and 2009 in Frederick County, VA (WVDNR 2011; VDGIF 2013). CWD is a fatal neurological disease impacting deer and other large herbivores (VDGIF 2013).

Deer habitat quality and numbers are directly associated with soil quality, habitat type, successional stage, and the amount of habitat interspersed or edge (VDGIF 2007). Key habitat factors that have the greatest influence on deer habitat quality in the Piney River project area are early successional forest created by regeneration harvest, late open canopy habitat created through thinning, grassland/shrubland creation with new grass forb openings, and mid to late successional hard mast producing forest.

The increase in browse availability created by implementing this proposed action would benefit the local deer population. Good acorn crops usually mean higher reproductive rates and better antler development for deer populations. In the short term (3-5 years) abundant browse and soft mast may result in an increased deer population. Local populations are expected to remain stable through time (within 10 years).

### Cumulative Effects

The cumulative effects considered for this analysis include past, present, and future actions which may include timber management, disease (e.g. chestnut blight), wildfires, prescribed burning activities, gypsy moth induced tree mortality, and system road usage and maintenance. All of these activities to some degree can have a cumulative effect on wildlife species and their habitats across the Forest. Data from past project records, on-going projects (prescribed burning), and databases recording previous treatments within the project area were utilized to assess the cumulative effects of this proposed project on MIS species. There are no additional timber activities planned in the reasonably foreseeable future in the project area.

Approximately 700,000 acres (67%) of forested land in the George Washington National Forest are currently classified as unsuitable for timber production (Forest Plan Appendix A-1). This forest land includes large unbroken sections of older aged forest stands that provide habitats for interior forest dwelling species as well as site sensitive species (black bear, ovenbird, pileated woodpeckers). Given these existing habitat conditions across the Forest, we expect that black bear and other wildlife species that utilize remote or interior forest habitats such as migratory songbirds, barred owl, wood thrush, coopers hawk, sharp-shinned hawk, and bat population trends would not be significantly affected by the implementation of the Piney River Project.

## **Fisheries and Aquatic Habitat**

### Issue Related to the Resource

Concern that the project may adversely impact water quality and aquatic communities in the project vicinity.

### Scope of the Analysis

With regards to impacts to the aquatic ecosystem, the geographic scope of this analysis will be identical to that analyzed for the water quality and sedimentation aspect of the water resource. The geographic scope of the cumulative analysis for aquatic species are the watersheds of the South Fork of the Piney River down to the confluence of Shoe Creek and the Little Piney River down to the Forest Service boundary. This analysis area was chosen because it is estimated that effects below this point would be insignificant and immeasurable. The time periods used for the cumulative analysis will be similar to those used for analyzing sedimentation effects to the water resources.

### Existing Situation

Existing conditions of aquatic habitats in the project area include ephemeral, intermittent, and perennial streams that feed the above-mentioned watersheds. North Fork Piney River and Louisa Spring Branch are Class I wild brook trout streams. The Virginia Department of Game and Inland Fisheries uses a method of classifying trout streams based on aesthetics, productivity, resident fish population and stream structure. Class I streams have outstanding

natural beauty possessing wilderness or at least remote characteristics, an abundance of large deep pools, and excellent fish cover. Substrate is variable with an abundance of coarse gravel and rubble. These streams contain a good population of wild trout or have the potential for such. They would be considered exceptional wild trout streams. South Fork Piney River, Greasy Springs Branch, Davis Branch, Little Piney River, and Georges Creek are Class II wild brook trout streams. Class II streams contains a good wild trout population or the potential for one but are lacking in aesthetic quality, productivity, and/or in some structural characteristic. These streams maintain good water quality and temperature, at least a fair summer flow, and adjacent land is not extensively developed. They would be considered good wild trout streams and represent a major portion of Virginia's wild trout waters. All of the streams would additionally support a cold/cool-water small stream fish assemblages that could include blacknose dace, mountain redbelly dace, rosieside dace, mottled sculpin, fantail darters and bluehead chub (VAFWIS Species Observations 2019). Within the project vicinity, the South Fork Piney River, Shoe Creek, Crabtree Creek and the South Fork Tye River support the American eel (*Anguilla rostrata*), a catadromous species that lives in headwater streams for up to 20 years before migrating to the Atlantic Ocean to spawn. Eels are declining worldwide, and recently were evaluated by the FWS for federal listing. Although their federal listing was not warranted, they are a species of concern to the State and the Forest Service. Another unique and rare aquatic organism found in project area streams is the water-fan lichen (*Peligeria hydrothyria*). One of only two exclusively aquatic lichen species, it is found in cool, clear streams having minimal sediment, good water quality, and moderated year round flow.

Wild brook trout are the Management Indicator Species (MIS) for cold water habitats in the George Washington Forest Plan. The Riparian Area Desired Condition maintains the natural stream system hydrology, water quality within a range that ensures aquatic species survival, and the biological integrity of aquatic communities. In addition, streambanks are managed in a manner that restores and maintains amounts of LWD sufficient to maintain habitat diversity for aquatic and riparian-dependent species (approximately 200 pieces per mile) (OBJ WTR-3, 2014 GW Plan page 3-4).

Bioindicators - Aquatic macroinvertebrate communities integrate the physical, chemical and biological components of the riparian ecosystem, and have been successfully used as bioindicators to monitor change and impacts (EPA 1989). A Macroinvertebrate Aggregated Index for Streams (MAIS) (ranging from a score of 0 to 18) incorporates nine ecological aspects (metrics) of the aquatic macroinvertebrate community to evaluate the current condition of a stream relative to others within the same ecological section (Smith and Voshell 1997). It also establishes a baseline to evaluate effectiveness of standards, guidelines and mitigation measures in preventing changes and impacts to the aquatic community. Sample sites were selected downstream of management activity areas to monitor the impacts on stream health of projects including but not limited to timber sales and prescribed burns. Other samples were collected to create a baseline of stream conditions within the forest. Only samples collected from March through the first week in June were compared to minimize seasonal variability in structure of macroinvertebrate communities. Across the Forest, 1857 samples were collected, analyzed and assigned an overall MAIS score (0-18). Of these samples, 76% were in the “good” and “very good” categories. An analysis of benthic and

water quality data by Smith and Voshell (2013) indicated that the macroinvertebrate condition is significantly correlated to ANC and pH, and that several specific benthic metrics (Ephemeroptera taxa, Percent ephemeroptera, Percent scrapers and HBI) are responding to changes in ANC and pH. The greatest values of the benthic metrics tend to occur at ANC values that are 20 or greater. As described above, roughly 20% of the sites had trends in ANC and pH; except for limed streams the majority of those trends were decreasing. These sites with low ANC or pH would have “poor” or “fair” MAIS scores.

Smith and Voshell (2013) also compared pre-activity macroinvertebrate metrics with post-activity metrics for streams located below timber harvests and prescribed burns at various locations across the Forest and concluded that “management practices are successful at reducing effects on aquatic organisms” from these activities. The results showed no decline in macroinvertebrates following timber sales or prescribed burns.

Within the project area, macroinvertebrate samples have been collected from project area streams and tributaries at various locations beginning in 1992. Some of the streams in the area would be expected to have reduced macroinvertebrate assemblages related to low flow conditions, especially in the summer or fall. Scores range from poor/fair to very good (see Table 15 below).

**Table 15. MAIS scores from Project Area Streams**

<b>StationID</b>	<b>Stream Name</b>	<b>Date</b>	<b>MAIS Score</b>	<b>Assessment</b>
5005	South Fork Piney River	6/30/1992	15	Good
5009	Little Piney River	6/21/1993	18	Very Good
5009	Little Piney River	4/14/1997	15	Good
5038	Kings Creek	8/2/1995	16	Good
5038	Kings Creek	4/14/1997	15	Good
5039	Greasy Springs Branch	8/2/1995	17	Very Good
5044	North Fork Piney	8/24/1995	14	Good
5078	Georges Branch	8/3/1994	12	Poor/Fair
5078	Georges Branch	5/2/2005	16	Good
5099	Big Hollow	3/30/1999	12	Poor/Fair
5105	S. Fork Piney River	4/2/2002	18	Very Good
5105	S. Fork Piney River	3/12/2003	15	Good
5105	S. Fork Piney River	5/28/2003	15	Good
5105	S. Fork Piney River	5/2/2005	16	Good
5105	S. Fork Piney River	5/7/2007	16	Good
5105	S. Fork Piney River	5/1/2009	17	Very Good
5105	S. Fork Piney River	3/22/2010	16	Good
5105	S. Fork Piney River	5/25/2011	17	Very Good
5105	S. Fork Piney River	4/30/2012	15	Good

5105	S. Fork Piney River	4/22/2013	14	Good
5105	S. Fork Piney River	4/24/2014	16	Good
5105	S. Fork Piney River	4/28/2015	15	Good
5105	S. Fork Piney River	4/21/2016	17	Very Good
5108	Davis Branch	3/21/2000	10	Poor/Fair
5108	Davis Branch	3/30/2002	13	Good
5108	Davis Branch	3/12/2003	17	Very Good

Water quality samples were likewise collected from these streams to evaluate the current conditions of water chemical properties and to monitor changes over time. Nine chemical parameters associated with the effects of acid deposition and nutrient loading are measured in each sample, including pH, acid neutralizing capacity (ANC), and nitrate (NO<sub>3</sub>). Georges Creek and Greasy Spring Branch are part of the Virginia Trout Stream Sensitivity Study and have over 118 water chemistry samples collected quarterly since 1987. Only 2 years of the most recent quarterly data for those streams are shown below. All of the streams have very good water quality throughout the year, stemming from the underlying parent geology in the watershed; no values indicate an existing water quality issue (see Table 16 below). In addition to good water quality, streams in this area have consistent year-round water flow and cool temperatures that are maintained by numerous springs and forested cover of the watershed and riparian areas.

**Table 16. Water quality parameters for Project Area Streams**

Location ID	Stream Name	Sample Date	pH	ANC ueq/L	Ca ueq/L	Mg ueq/L	Na ueq/L	K ueq/L	Cl ueq/L	NO <sub>3</sub> ueq/L	SO <sub>4</sub> ueq/L
5005	SOUTH FORK PINEY RIVER	01/15/95	6.96	71.40	54.90	15.60	27.80	5.70	11.20	5.05	16.4
5005	SOUTH FORK PINEY RIVER	02/25/97	6.52	39.70	22.70	8.72	18.40	6.19	23.00	3.1	33.3
5009	LITTLE PINEY RIVER	08/11/94	7.16	149.00	109.00	31.30	60.90	15.90	22.40	21.8	27.3
5009	LITTLE PINEY RIVER	01/15/95	6.83	71.40	61.40	23.00	31.90	7.80	15.90	9.42	27.5
5009	LITTLE PINEY RIVER	02/25/97	6.78	73.90	55.90	23.30	29.40	12.50	31.90	12.5	10.6
5038	KINGS CREEK	02/25/97	6.79	84.60	54.90	23.00	21.90	12.50	26.90	12.3	9.81
5038	KINGS CREEK	04/09/98	6.76	95.00	44.70	24.20	53.50	10.50	18.60	10.2	36
5039	GREASY SPRING	02/05/16	6.68	56.42	30.32	11.33	39.61	5.03	16.95	0.00	15.29

	BRANC H										
5039	GREASY SPRING BRANC H	04/30/16	6.7 5	71.24	42.25	14.89	43.2 1	6.19	16.8 0	0.37	10.2 1
5039	GREASY SPRING BRANC H	07/31/16	6.6 8	84.56	42.05	15.24	45.4 0	6.95	17.6 0	0.34	8.84
5039	GREASY SPRING BRANC H	10/29/16	6.7 2	72.36	32.40	12.71	42.6 6	7.71	17.3 7	0.00	9.01
5039	GREASY SPRING BRANC H	01/31/17	6.6 0	56.04	27.07	10.27	40.2 4	5.13	17.1 5	0.00	11.1 3
5039	GREASY SPRING BRANC H	04/30/17	6.7 5	60.28	33.61	11.47	41.2 4	5.75	16.8 7	0.08	10.6 6
5039	GREASY SPRING BRANC H	07/31/17	6.7 8	75.79	44.76	16.30	47.3 3	7.59	16.7 2	0.00	9.01
5039	GREASY SPRING BRANC H	10/31/17	6.6 3	64.60	31.30	12.43	42.7 6	8.22	17.7 3	0.00	13.8 7
5044	NORTH FORK PINEY	02/25/97	6.5 0	37.70	24.00	9.30	11.8 0	6.09	16.3 0	2.81	83.7
5078	GEORGE S CREEK	02/05/16	6.6 0	49.24	43.86	17.45	47.6 8	5.74	17.3 2	0.00	38.6 0
5078	GEORGE S CREEK	04/30/16	6.7 1	71.24	53.25	20.82	54.5 2	8.21	18.5 8	3.69	34.6 2
5078	GEORGE S CREEK	07/31/16	6.4 3	112.7 3	62.03	23.25	61.8 0	10.7 4	19.3 0	-0.03	27.2 8
5078	GEORGE S CREEK	10/29/16	6.7 0	92.98	52.31	21.08	56.4 4	11.9 0	18.9 7	0.00	34.0 8
5078	GEORGE S CREEK	01/31/17	5.9 4	53.37	47.74	18.83	51.2 3	6.74	18.6 9	7.68	36.3 9
5078	GEORGE S CREEK	04/30/17	6.4 9	65.42	50.09	18.81	54.7 6	8.23	19.5 0	0.00	33.2 0
5078	GEORGE S CREEK	07/31/17	6.6 2	93.35	66.26	24.19	63.8 2	11.2 7	19.6 8	0.00	27.3 7
5078	GEORGE S CREEK	10/31/17	6.6 4	70.73	44.10	19.03	57.0 0	12.2 4	22.8 0	0.00	37.9 7



5099	BIG HOLLO W	03/15/99	6.3 4	86.70	71.40	25.70	38.9 0	3.61	77.6 0	14.8	36.2
5105	SOUTH FORK PINEY (UPPER)	03/15/00	6.5 6	29.70	14.20	5.30	9.61	1.80	8.41	3.19	6.39
5105	SOUTH FORK PINEY (UPPER)	01/23/02	6.7 5	52.70	47.40	15.60	41.9 0	6.50	17.5 0	11.7	16.4
5105	SOUTH FORK PINEY (UPPER)	02/24/04	6.5 7	87.20	40.00	11.80	31.8 0	9.59	18.4 0	5.31	8.2
5105	SOUTH FORK PINEY (UPPER)	02/02/05	6.6 1	57.10	46.00	12.40	42.0 0	5.91	20.0 0	5.19	6.7
5105	SOUTH FORK PINEY (UPPER)	03/05/07	5.2 3	42.70	60.40	16.00	35.9 0	5.50	18.9 0	9.4	8.99
5105	SOUTH FORK PINEY (UPPER)	03/25/09	6.2 7	54.00	59.40	15.20	36.7 0	4.40	16.8 0	3.4	6.2
5105	SOUTH FORK PINEY (UPPER)	03/15/10	6.4 7	44.84	60.45	18.10	36.6 0	6.57	19.0 1	5.8	12.4
5105	SOUTH FORK PINEY (UPPER)	02/14/12	6.6 0	55.54	57.99	16.67	40.7 6	5.69	21.2 2	0.61	7.24
5105	SOUTH FORK PINEY (UPPER)	04/25/13	6.6 5	59.28	56.44	15.22	37.3 0	4.27	19.0 0	0.8	7.45
5105	SOUTH FORK PINEY (UPPER)	04/24/14	6.5 7	58.10	60.16	15.30	37.2 0	6.23	17.3 7	3.3	7.47
5105	SOUTH FORK PINEY (UPPER)	04/28/15	6.7 0	62.30	33.60	8.80	38.4 0	4.40	15.8 0	2	6.6
5105	SOUTH FORK	04/21/16	6.6 8	74.9	41.2	10.0	39.7	5.6	16.0	2.5	7.6

	PINEY (UPPER)										
5105	SOUTH FORK PINEY (UPPER)	4/20/201 7	6.6 2	83.8	94.7	26.0	45.9	7.6	17.4	0.6	6.8
5105	SOUTH FORK PINEY (UPPER)	4/19/201 8	6.0 5	56.35	72.07	22.69	47.3 4	6.89	16.7 9	12.18	8.47
5105	SOUTH FORK PINEY (UPPER)	04/11/19	6.4 4	71.64	69.04	26.93	40.9 7	7.22	17.9 5	1.13	10.6 0
5106	SOUTH FORK PINEY	03/15/00	6.7 6	57.10	34.60	11.20	23.5 0	3.40	20.7 0	4.19	15.5
5106	SOUTH FORK PINEY	01/23/02	7.3 9	274.0 0	132.0 0	126.0 0	95.3 0	18.7 0	30.7 0	0BID L	54.5
5108	DAVIS BRANC H	03/15/00	6.8 0	63.50	36.60	14.30	27.8 0	4.40	24.7 0	7.4	19.9
5108	DAVIS BRANC H	02/27/04	7.0 1	144.0 0	55.90	36.10	82.2 0	19.0 0	22.7 0	1.4	33.5

### Direct, Indirect, and Cumulative Effects

#### **Alternative 1 (Modified Proposed Action)**

The Proposed Action has the potential to affect water resources and aquatic biota as a result of the proposed actions of timber harvesting activities, temporary road construction, and prescribed burning. Temporary road approaches to streams would be graveled and crossings would be designed according to Forest Plan standards. Ancillary projects in this proposal that could affect water resources and aquatic biota include: addition of large woody debris (LWD) to Little Piney River and South Fork Piney River, replacement of a damaged culvert on Forest Service Road (FSR) 1167-Coon Bridge at its intersection with Georges Creek, decommissioning of approximately 1.3 miles of Forest Service Road (FSR) 63A, and closure of user-created unauthorized roads within the project area.

The following actions are not expected to have ground disturbing activities and are located in the South Fork of the Tye River and associated tributaries; Crabtree picnic ADA project, Crabtree meadows prescribe burn and old field enhancements.

The project is primary located within the Little Piney River-Piney River 6<sup>th</sup> level HUC # 020802030505. The proposed prescribed fire and old field enhancement at Crabtree meadows,

and Crabtree picnic ADA work, which would not include ground disturbing activities, are located in the South Fork Tye-North Fork Tye River 6<sup>th</sup> level HUC # 020802030501.

### *Timber Harvest and associated activities*

No timber harvest or ground disturbing activities would occur in protected riparian corridors for perennial and intermittent streams. Forest harvesting can directly affect sediment transport in streams if it increases (or decreases) the supply of sediment, if it alters the peak flow or the frequency of high flows, and if it changes the structure of the channel by removing the supply of large woody debris that forms sediment storage sites. Bank erosion and lateral channel migration also contribute sediments if protective vegetation and living root systems are removed (Chamberlin et al. 1991). Through application of mitigation measures and Best Management Practices, these impacts can be largely avoided. The physical removal of timber at sites away from the streams poses very little direct threat to the aquatic resource or organisms. The use and construction of roads, skid trails, and log landings could increase the amount of sediment entering the stream system during periods of high flow. Sediment loading in streams affects the aquatic fauna directly and indirectly. Direct effects include damage to gills by abrasion of suspended particles. Indirect effects come from a reduction in available dissolved oxygen, and reduced surface area and spawning habitat due to substrate being covered with sediment. Application of mitigation measures and Best Management Practices would minimize the amount of sediment actually reaching the streams.

If a riparian buffer zone were not left along the streams in the project area, reduction of streamside canopy could affect the physical characteristics of the stream channel and can also affect food quality and quantity for stream organisms directly and indirectly. Direct effects occur by changing the input of particulate food (leaf litter). Indirect effects come from alteration of the structure and productivity of the microbial food web through shading and modifying the levels of dissolved organic carbon and nutrients. A 2-5 degree C warming of small streams can affect life history characteristics of macroinvertebrates and developmental time of fish eggs (Sweeney, 1993). These potential impacts would be negligible since, under all alternatives, a riparian corridor buffer zone would be left along each stream. The width of this zone depends on the size/characteristics of the stream and is consistent with the Forest Plan direction for MA Rx 11, riparian areas and the Virginia BMPs. The primary function of this zone is to manage the area for riparian dependent resources. An additional function of this zone is to stabilize the stream bank, to moderate water temperature and promote the growth of desirable algae via shading, to provide soil/water contact area for biogeochemical processing of nutrients, and to contribute necessary organic detritus and large woody debris to the stream ecosystem. Minimal to undetectable impacts to aquatic plants and animals as a result of commercial timber harvest, temporary road and log landing construction in the proposed manner are expected.

### *Prescribed Burning*

Prescribed burning conditions are specifically chosen to achieve effects to target vegetation while maintaining a duff layer and soil structure, not exposing mineral soil. When used as a fire line or fire break, streamside riparian vegetation rarely burns because of a moist environment and humid microclimate. When constructed, firelines are either handlines or wetlines within the

riparian area to minimize soil disturbance and erosion as per Forest Plan direction and project design elements. Erosion and sedimentation from dozer lines poses the greatest risk from the prescribed burning activity. Recent research on the Forest showed no change in water quality following an extreme wildfire event that burned an entire watershed (Downey and Haraldstadt, 2013). The fire activity and effect to vegetation within the proposed project watersheds would be much less than was described in that study. Since the control lines for the proposed prescribed burns would utilize existing roads, trails, and streams, and have minimal ground disturbance, and based on previous monitoring, recent research, and plan standards, there would be no direct, indirect or cumulative effects to the fisheries or aquatic resource from prescribed burning.

### *Large Woody Debris*

The proposed actions include addition of LWD to Little Piney River and the South Fork of the Piney River, where deficient (as per Forest Plan OBJ WTR-3), to enhance and maintain aquatic habitat diversity for aquatic and riparian dependent species. Furthermore, protection of the riparian area would allow for the natural recruitment of LWD in the future. Active and future recruitment of LWD is expected to improve the amount and distribution of pool habitat in area streams in the future.

### *Road Decommissioning and Culvert Repair*

The removal and rehabilitation of unused or user created roads from the system (including culvert infrastructure), and cessation of vehicular traffic would reduce erosion and sedimentation to area streams, allow recovery of riparian vegetation, and protect aquatic species, including wild brook trout. The repair and replacement of the failed culvert on FSR 1167 with one allowing aquatic organism passage would reduce erosion and sedimentation to Georges Creek, and improve overall stream connectivity.

### *Conclusions*

The use of design elements, BMP's and avoidance of impacts in riparian areas would result in negligible impact to aquatic biota or aquatic and riparian MIS, specifically wild trout. Some minor sedimentation can be expected from harvest activities. As discussed in the Hydrology section, no alternative should produce sediment that would be outside the natural range of variability or have a significant impact on the beneficial uses of area streams. The minor sediment increases are unmeasurable and insignificant in comparison to the sediment load of streams in the analysis area and would have no significant effect on habitat for fish or other aquatic life. The mitigation and design criteria sections of this EA contains measures that would be used to reduce sedimentation and protect the beneficial uses.

### **Alternative 2 (No Action)**

Under this alternative, watershed and streamside vegetation and soil would remain unchanged and continue to provide shading and a future source of nutrients and large woody debris. There would be no impact to the aquatic ecosystem due to vegetative management. Impacts from user

created roads and the failed culvert on Georges Creek would continue to negatively affect water resources and aquatic biota.

## **Threatened, Endangered, Sensitive and Locally Rare Species**

### Issue Related to this Resource

None

### Scope of the Analysis

Effects to Threatened, Endangered, and Sensitive (TES) species from the proposed management activities have been addressed in the Biological Evaluation/Biological Assessment (BE/BA) for this project. For a full discussion of the effects to TES species by taxa, consult the BE/BA and USFWS consultation documentation for this project. As discussed in the BE/BA, there would be no direct, indirect, or cumulative effects from performing these actions on any TES species, beyond those already discussed through previous consultation.

### Existing Situation

The Glenwood/Pedlar Ranger District supports known occurrences and suitable habitat for several TES species, all of which were considered in this analysis. The Biological Evaluation/Biological Assessment (BE/BA) documents the analysis of potential impacts of the proposed project to TES species and associated habitat. It also serves as biological input into the environmental analysis for project-level decision-making to ensure compliance with the ESA, National Environmental Policy Act (NEPA), and National Forest Management Act (NFMA). A Biological Evaluation (BE) of the proposed project has been completed and is contained in the project files at the Glenwood/Pedlar Ranger District office in Natural Bridge.

As a result of the Biological Evaluation process, the following 4 species are known or suspected to occur in or near the area or are potentially impacted by the modified proposed action (Alternative 1).

### TES Summary

This project is likely to adversely affect the Northern long-eared bat; however, there are no effects beyond those previously disclosed in the programmatic biological opinion on implementing the final 4(d) rule dated January 5, 2016.

The effects of the proposed project activities are may affect, likely to adversely affect the Indiana bat. However, the activities connected with this project are consistent with those covered by previous formal consultations: USFS 2012, USFWS 2013, 2014 (no additional formal consultation required).

No individuals have been observed within the project area, but potential habitat exists for the Monarch and Regal Fritillary. If present, individuals of these species may be impacted initially as

a result of proposed old field improvement activities and prescribed fire treatments, but would ultimately benefit from the management activities. There would be no long term negative impact that would cause a loss of species viability on the Forest or cause a trend towards federal listing under the ESA.

The Tricolored bat has the potential to be present, but it was determined there are no known impacts that should result from implementation of this project that would adversely impact species viability and given the scope of the activities the proposed action would not contribute to a trend toward federal listing of this species under the Endangered Species Act.

#### Natural Communities, SBA's, Locally Rare and Species of Concern

Locally rare species are those species determined at the Forest level due to concerns about losing representation of that species on the Forest, even though they are secure range-wide. The distribution of species on the locally rare list is checked to determine if they occur in the county or watershed where the action is proposed by consulting databases maintained by the Division of Natural Heritage of the Virginia Department of Conservation and Recreation (DNH) (<https://vanhde.org/species-search>), the Virginia Department of Game and Inland Fisheries (DGIF) (<http://vafwis.org/fwis/>), NatureServe (<http://www.natureserve.org/explorer>), and the USDA Natural Resources Conservation Service Plants Database (<http://plants.usda.gov>). Habitat needs were also considered; for example, high elevation forest or glade, or spruce/fir forest, or riparian area, or cave.

The Crabtree meadows prescribe burn unit is located within the Upper Crabtree Creek SBA, which is a central Appalachian high elevation seepage swamp characterized by Hemlock, Yellow Birch, aquatic resources and two Historically documented Locally rare plants, Highland Doghobble, 1950 and Bog-willow herb, 1968. The control lines for the proposed burn unit would consist of existing roads and trails, therefore no ground disturbing activities would be necessary. Fire intensity is expected to be very low or non-existent in the riparian areas where the yellow birch, hemlock and aquatic resources are present. No negative impacts are expected.

The Virginia Department of Conservation and Recreation-Heritage Division (DCR) has conducted several surveys specific to this project. Four new significant natural communities were identified and delineated based on overall ecological diversity and richness. Two sites are located adjacent, but outside of units 1 and 6.

DCR has also conducted botanical surveys in the project area and found Heart-leafed skullcap, *Scutellaria ovata* var. *rugose* and American ginseng, *Panax quinquefolius* within or adjacent to harvest units 1, 6 and 7. It is expected that individual plants would be crushed and habitat altered by traditional harvestings operations. However, a majority of the plants and associated habitat found in the project vicinity are located adjacent to or outside the project activity areas. There would be no long term negative impact that would cause a loss of species viability on the Forest or cause a trend towards federal listing under the ESA.

American Eels are located in the South Fork of the Piney River, Shoe Creek, Crabtree Creek and the South Fork of the Tye River. The entire project area is classified trout waters. These two

species and other aquatic resources would not be impacted by the proposed action given the strict adherence to erosion and sediment/storm water management BMP's and Forest Plan Riparian standards.

The project vicinity contains high elevation old field habitats, which are preferred by Golden-winged warblers. The proposed vegetation management activities would benefit many game and non-game species including Golden-winged warblers and other high elevation early successional bird species. Golden-winged warblers are declining and have historically been observed in the surrounding project area. However, primarily due to lack of diverse age class forests near old field environments this species has not been observed in the project area in recent years. Golden-Winged warblers nest in shrub habitat and breed in young forests, but fledglings move among forest stands of varying ages. To maximize golden-winged warbler breeding habitat approximately 15 percent of the forest landscape should be in young forest condition. Mid-successional forests in poor condition should be targeted for creation of young forest habitat.

Cerulean Warblers are located in the project area and surrounding vicinity. There are opportunities to use forest management practices to mimic the structure and natural disturbance regime of old-growth forests to enhance habitat for Cerulean Warblers. Thinning harvest methods, which retain 40-90 basal area, and group selection harvest methods, which both favor oak species, can provide for diverse canopy and understory structure that can advance stands toward a late open successional structure that benefit many avian species. The variable retention harvest method (thinning) is proposed for units 1 and 2 and would generally improve conditions for Ceruleans across approximately 38 acres. The remaining units would be harvested using regeneration methods, which total approximately 95 acres. However, not all of the proposed regeneration units contain suitable and or preferred habitat for Ceruleans.

It is expected that the fire would back with low intensity through the rich cove of hardwoods therefore not disturbing the mating and nesting habitat used by Ceruleans. The occasional tree mortality caused by fire would enhance the future habitat for the cerulean warbler as they prefer mature well developed hardwood crowns. Crop tree release is also a forestry practice that can impact habitat suitability for Ceruleans by accelerating growth of dominant oak stems. The impact on Ceruleans and suitable habitat would not be immediate.

### **Alternative 2 (No Action)**

Under Alternative 2, there are no management activities and therefore, there would be no potential impacts to the threatened, endangered, sensitive species or locally rare species in this area.

## **PHYSICAL ENVIRONMENT**

### **Water (Hydrology) and Soil Resources**

#### Issue Related to this Resource



The Modified Proposed Action Alternative would construct roads and conduct timber harvest activities that may impact slope stability and productivity, particularly on slopes greater than 35%.

Concern that the project would adversely impact water quality and aquatic communities in the project vicinity.

### Scope of the Analysis

Effects analysis is performed in the context of watersheds containing proposed activities. In consultation with the Forest Fish Biologist two watersheds were defined for effects analysis (D. Kirk, George Washington-Jefferson NF, personal communication). These watersheds were chosen because it is expected that effects below these points in the channel networks would be immeasurable (Table 17).

**Table 17. Analysis watersheds and proposed harvest units.**

<b>Watershed</b>	<b>Watershed Area (Acres)</b>	<b>Number of Units</b>	<b>Total Unit Area (Acres)</b>
South Fork Piney River above Shoe Creek	7,819	6	123.7
Little Piney River at FS Boundary	5,082	1	10.5

Effects to soil and water quality occur on different time scales (Table 18). Direct effects to soil quality occur where soil is subject to detrimental disturbance by grading of temporary roads, skid roads, and log landings (Page-Dumroese et al 2009). These soils are affected long-term and may require more than 100 years for site productivity and sustainability to recover (J. Howard, George Washington-Jefferson NF, personal communication).

Direct effects to water quality occur at channel crossings where fine material in the stream banks and bed is mobilized and produces turbidity. Indirect effects result when upland soil is eroded from disturbed areas and mobilized to receiving waters. Effects to water quality are primarily short-term. Within two years after sale areas are closed herbaceous vegetation should become established from seed and volunteers on temporary roads and log landings. This vegetation substantially reduces the risk of surface erosion and of sediment loading to waterbodies.

**Table 18. Time scales of project effects to soil and water quality.**

<b>Resource</b>	<b>Short-Term Effects</b>	<b>Long-Term Effects</b>
Soil Quality	< 100 years	> 100 years
Water Quality	2 years	NA

### Existing Situation

Project units are underlain by three soil map units based on analysis using the NRCS Web Soil Survey (Table 19).

**Table 19. Distribution of soils within project treatment units.**

Soil Map Unit	Surface Texture	Acres in Unit #1	Acres in Unit #2	Acres in Unit #3	Acres in Unit #4	Acres in Unit #5	Acres in Unit #6	Acres in Unit #7	Total Acres
Edneytown-Peaks Complex	Loam	28.7	3.0	22.8	12.6	0.0	32.9	0.0	99.9
Peaks-Rock outcrop complex	Gravelly loam	0.0	0.0	0.0	4.2	6.9	2.8	3.3	17.2
Saunok loam	Loam	0.0	7.5	0.0	0.0	0.0	2.4	7.2	17.1

These soils are characterized by loam or gravelly loam surface textures and depths to bedrock ranging from 34" (Peaks-Rock outcrop complex) to more than 60" (Edneytown-Peaks complex and Saunook loam). The soils are well drained to somewhat excessively drained (Peak-Rock outcrop complex).

Refer to the Fisheries and Aquatic Habitat report within this EA for additional water quality data.

#### Direct, Indirect, and Cumulative Effects

#### **Alternative 1 (Modified Proposed Action)**

##### *Soil Impacts*

Total project detrimental soil disturbance was estimated at 11 and 5 acres over the short- and long-term, respectively (Tables 20 and 21). The maximum proportion of harvest units subject to short- and long-term soil disturbance was approximately 8% and 5%, respectively. The maximum proportion of watersheds impacted by short- and long-term soil disturbance was 0.14% and 0.07%, respectively.

**Table 20. Soil disturbance from skid roads and landings by harvest unit.**

Watershed	Watershed Area (Acres)	Unit		Total Acres Disturbed		% Unit Area Disturbed	
		#	Acres	Short-Term	Long-Term	Short-Term	Long-Term
SF Piney River above Shoe Ck	7,819	1	28.7	1.31	0.64	4.6	2.2
""	""	2	10.4	0.60	0.13	5.8	1.2
""	""	3	22.8	0.93	0.13	4.1	0.5
""	""	4	16.8	0.79	0.58	4.7	3.4
""	""	5	6.9	0.55	0.34	7.9	5.0
""	""	6	38.1	1.86	0.80	4.9	2.1
Little Piney River at FS Boundary	5,082	7	10.5	0.66	0.13	6.3	1.2

In addition to skid roads and landings one temporary road is proposed for access to Unit # 4. This road is not contained within the boundaries of any units and so was not included in the table above.

**Table 21. Soil disturbance from temporary roads.**

Watershed	Watershed		Short-Term	Long-Term	Total % Watershed Area Disturbed	
	Area (Acres)	Feet Temp Road	Acres Temp Road	Acres Temp Road	Short-Term	Long-Term
SF Piney River above Shoe Ck	7,819	5,637	4.5	2.6	0.14	0.07

Long-term soil disturbance in the harvest units is under the threshold established in Forestwide Water and Soil Quality Forest plan Standard FW-5, pg. 4-1):

***FW-5:** On all soils dedicated to growing vegetation, the organic layers, topsoil and root mat will be left in place over at least 85% of the activity area and revegetation is accomplished within 5 years. (The activity area is the area of potential soil disturbance expected to produce vegetation in the future, for example: timber harvest units, prescribed burn area, grazing allotment, etc.)*

Five of the seven harvest units have 10% or more of their area on slopes estimated to be in excess of 35% grade based on digital elevation modeling (DEM) in GIS. The estimated percent of unit areas on slopes over 35% grade ranged from 0% to 46% (Table 22).

**Table 22. Percent of sale areas on slopes over 35% grade.**

Unit #	Total Acres	Acres with Slopes > 35%	Proportion with Slopes > 35%
1	28.7	3.8	13
2	10.4	1.5	14
3	22.8	0.0	0
4	16.8	6.8	41
5	6.9	3.2	46
6	38.1	6.6	17
7	10.5	1.0	10

Mechanical equipment operation on steep slopes risks damaging soils through displacement, rutting, compaction, and subsequent surface erosion. However, Forestwide standards that tier to state-level Best Management Practices (BMP) are applied to maintain soil productivity and sustainability (Forest Plan pg. 2-7):

***FW-1:** Resource management activities that may affect soil and/or water quality meet or are more stringent than Virginia and West Virginia Best Management Practices, State Erosion Control Handbooks, and standards in this Forest Plan.*

The State of Virginia Department of Forestry recommends that overland log skidding be limited to slopes under 35% (Virginia's Forestry Best Management Practices for Water Quality Field Guide [2009], pg. 39). Slope grades would be validated in the field during project implementation to prevent mechanical equipment use on slopes in excess of 35% and limit short- and long-term soil disturbance. Figure 10 is a map of the data presented in Table 22 showing areas with slopes estimated to be in excess of 35% grade based on digital elevation modeling.

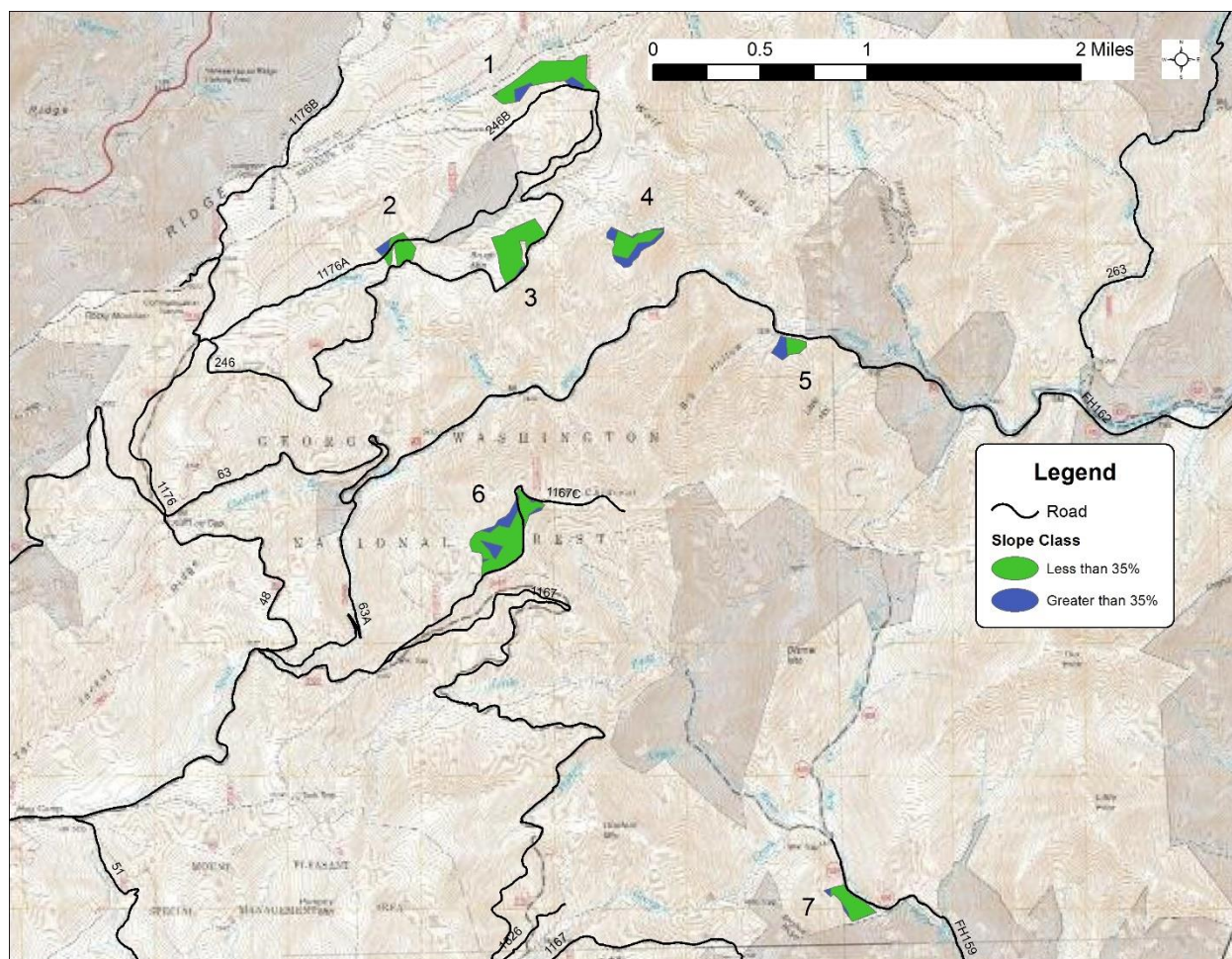


Figure 10. Soil and slope map

Direct, short-term (within 2 years) effects to water quality are anticipated at up to eight channel crossings based on a field surveys and GIS analysis. (Table 22).

### Water Quality

Table 23. Potential stream crossing disturbance associated with project.

# of Stream Crossings
-----------------------

Location	Temp Road	Bladed Skid	Unbladed Skid	Note
Unit # 2	0	0	2	Field surveyed
Unit # 5	0	1	0	Field surveyed
Unit # 6	0	0	1	From GIS data
Temporary Road to Unit # 4	2	0	0	From GIS data
63A Road Decommission	2 <sup>A</sup>	0	0	Field surveyed

A—63A road is a system road with two stream crossings that is being assessed for decommissioning.

Channel crossings need to be situated at designated locations, use improvement structures (e.g. culverts or temporary bridges), and be removed and rehabilitated after use (Forest Plan, pgs. 2-8 and 2-35):

**FW-15:** *Motorized vehicles are restricted in the channeled ephemeral zone to designated crossings. Motorized vehicles may only be allowed on a case-by-case basis, after site-specific analysis, in the channeled ephemeral zone outside of designated crossings.*

**FW-24:** *Construction of crossings is completed on all channeled ephemerals as soon as possible after work has started on the crossing. Permanent and temporary roads on either side of crossings within the channeled ephemeral zone are graveled.*

**FW-142:** *Skid trails may cross riparian corridors at designated crossings. If crossing a perennial or intermittent stream is unavoidable, use a temporary bridge or other approved method within the State Best Management Practices (BMPs). All streams are crossed at as close to a right angle as possible. Stabilization of skid trails will occur as soon as possible to minimize soil movement downslope.*

**FW-144:** *Temporary stream crossings will be removed and rehabilitated.*

**FW-145:** *Dips or waterbars or other dispersal methods will be constructed and maintained to direct stormwater off skid trails and reduce potential sediment flow to streams.*

These standards reduce the risk of sediment loading to water bodies. Effects to water quality are expected from storm events during project implementation and after sale areas close, but before herbaceous vegetation is established on temporary roads, bladed skid roads, and log landings. These effects should not persist beyond the short-term (2 years).

Decommissioning of the 63A road and removal of two culverts in the road would produce direct, short-term effects to water quality. The culvert near the north end of the road across Childress Branch would require heavy equipment for excavation and is easily accessible from the main 63 road. The culvert near the south end of the road across an unnamed left-bank tributary to South Fork Piney River is smaller, partly exposed, and may be able to be removed by hand. The following objective identified in the Forest Service National Best Management Practices for Water Quality Management technical guide (USDA 2012, pg. 115) is applicable to potential decommissioning of the 63A road:

**Road-6:** *Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by storing closed roads not needed for at least 1 year (Intermittent Stored Service) and decommissioning unneeded roads in a hydrologically stable manner to eliminate hydrologic connectivity, restore natural flow patterns, and minimize soil erosion.*

The following road decommissioning practices (USDA 2012, pg. 117) would reduce the risk of sediment loading to water bodies:

- *Remove drainage structures.*
- *Reshape the channel and streambanks at crossing sites to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site.*
- *Restore or replace streambed materials to a particle size distribution suitable for the site.*

Decommissioning of the 63A road either as part of the project or at a later date would increase risk of sediment loading in the short-term but reduce the risk over the long-term.

## **Alternative 2 (No Action)**

The No Action alternative would have no sediment or water quality/quantity impacts beyond naturally occurring conditions.

### Cumulative Effects

Effects of Forest Service and non-Forest Service roads and trails on soil and water quality in the analysis watersheds is ongoing and not expected to change appreciably in the foreseeable future. Legacy detrimental soil disturbance from previous timber harvest features (temporary roads, bladed skid roads, and log landings) is likely still present in the analysis watersheds, but these activities are not still producing measurable water quality effects. Prescribed fire may be anticipated in the analysis watersheds, but prescribed fire is typically of low- to moderate intensity and does not produce adverse effects to soil or water quality. No other foreseeable projects are planned on Forest Service lands in the analysis watersheds at this time.

## **SOCIAL ENVIRONMENT**

### **Visual and Scenic Resources**

#### Issue Related to the Resource

The project may have negative impacts to the visual experience of the Mount Pleasant National Scenic Area, ANST and other surrounding viewpoints.

#### Scope of the Analysis

The geographic bounds for this scenery analysis includes the area with views to the project area from roads, trails and other viewing platforms with an inventoried sensitivity level of 1 or 2 that exist outside and inside of the project area boundary. The travelways analyzed are:

- Concern Level 1: Appalachian National Scenic Trail (FST #1), Blue Ridge Parkway, Little Priest Trail (FST #525), Henry Lanum Loop Trail (FST #705)
- Concern Level 2: George's Creek Trail (FST #735), State Routes 634, 827, 745, 629, 621 and FS Road 63.
- Other Sites: Crossroads Camp and Conference Center

Each proposed treatment unit was evaluated from viewpoints established on these travelways using a combination of the GIS ArcMap Visibility tool and Google Earth Pro © ground simulations and street views. This analysis determines if the proposed actions would meet the Scenic Integrity Objectives (SIOs) established in the Forest Plan or could meet them using design criteria to reduce visual contrasts to the valued landscape character.

The analysis considers and incorporates projects that occurred in the past that remain visible and influence the existing landscape character, and considers reasonably foreseeable future actions.

### Existing Situation

The existing landscape character within the project area pertaining to scenery is predominantly hardwood forests with intact overstory and canopies, and a forest structure that includes woody mid-story and shrub species, and herbaceous groundcovers and vines. Some evergreen species exist, particularly near streams that offer a cooler, moist environment. The terrain is mountainous with steep slopes and drainages that create side ridges that extend out and down from long, winding ridgelines that are dotted with peaks, knobs and saddles.

Human alterations are evident in the presence of Forest Service roads and road features (culverts, bridges, signs, gates) as well as closed roadbeds and skid trails that are most visible when viewed within the Foreground distance zone. The forest is so dense that many roads and trails are not visible in satellite imagery in and near the project area. Human altered landscapes in and near the project area include field habitat maintained at lower elevations on the east side of Tar Jacket Ridge and an 80-acre open area maintained by Appalachian Trail partners on Cove Mountain. Both are visible from the Middleground distance zone and the Cole Mountain opening may be visible from the Background distance zone.

### *Management Prescriptions Outlined in the Forest Plan*

As stated above, the Forest Plan establishes SIOs for every management prescription area based on the inventoried Scenic Classes. For the Piney River project area, the Scenic Classes present are 1, 2, 3 and 5, and the Management Prescription is Mosaics of Wildlife Habitat (13). The SIOs established in the Forest Plan are:

**Table 24. Scenic Classes within the Piney River Project Area**

Scenic Classes Within Project Area	1	2	3	5



Management Prescription Area 13 - Mosaics of Wildlife Habitat	High	Moderate	Moderate	Moderate
--	------	----------	----------	----------

To accommodate meeting the SIOs, the implementation of Alternative 1 would utilize the applicable measures and design criteria described in the Forest Plan Chapter 3 – Strategy, Table 3-3 Scenery Treatment Guide.

#### Direct and Indirect Effects

#### **Alternative 1 (Modified Proposed Action)**

For the visual resource analysis, 63 viewpoints were established on 5 roads, 4 trails and a private camp/conference center. Based on GIS visibility analysis indicating no proposed treatments would be visible from the Blue Ridge Parkway, no viewpoints were established for that travelway. A brief summary of the analysis follows.

##### *Prescribed Fire within High SIO*

A prescribed fire treatment is proposed within Management Prescription Area 4A – Appalachian National Scenic Trail Corridor, and the AT footpath runs through the area proposed for prescribed fire. The ability of this action to meet the High SIO requires that signs of the management activity are not noticeable to the casual observer after one year. If the majority of blackened areas of tree trunks and rocks are adequately covered in new herbaceous growth within one growing season, especially within the immediate foreground of the footpath, the prescribed fire can meet the High SIO. The forest area within this unit would have a more open appearance than the forest area on either side, however it would remain natural appearing and not likely to draw the attention of the casual observer on the AT. The reduction in fuels may help prevent a future wildfire that could have greater impacts than the proposed controlled burn.

The prescribed fire in Alternative 1 would meet the High SIO.

##### *Mechanical Treatments in Moderate SIO*

Alternative 1 would result in some of the management activities in the Moderate SIO areas being visible and noticeable to the casual observer from multiple viewpoints. These activities would introduce contrasts in line, color and texture from the existing landscape. These visible changes would be more noticeable during leaf-off seasons and during times of the day that darker, longer shadows are cast around the edges of new openings. The openings would also be more noticeable when there is snow or heavy frost on the ground.

To meet the Moderate SIO, management activities may be noticeable to the casual observer but should not begin to dominate the landscape character viewed. The scenery analysis conducted indicates that most of the treatment areas would not be noticeable to the casual observer, or if noticeable, would not begin to dominate the existing landscape character. This is due to different factors for different viewpoints, but generally include vegetative screening, intervening terrain that blocks the view, only small portions of the proposed treatment units being visible, distance between the viewer and the unit, angle of view, and aspect of the units to the viewer.

---

Unit 1 is potentially visible and noticeable at short to moderate distances from a number of viewpoints along the ANST. Although, field reconnaissance completed during leaf off indicates the proposed activities for all harvest units would not affect the visual experience from the ANST.

Unit 5 would be visible and noticeable in the immediate foreground of FSR 63. The project map appears to indicate a buffer of retention trees approximately 60 - 70 feet wide. This buffer, allowing for one or two openings to access the unit, would be sufficient to reduce the visual contrasts and meet the Moderate SIO.

Unit 6 is expected to be visible and noticeable during leaf-off from a number of viewpoints along the Henry Lanum Loop Trail and FSR 63. Due to it being a relatively large, high elevation unit, the contrasts in texture and color could begin to dominate the landscape character. To meet the SIO, design criteria should be employed such as increasing the number of retention trees to reduce the visibility of bare ground.

Unit 7 (in the scoping this was unit 11) would be visible and noticeable in the immediate foreground of SR 629. A narrow buffer of retention trees (60 - 70 feet wide) would be sufficient to reduce the visual contrasts and meet the Moderate SIO.

#### *Prescribed Fire within Moderate SIO*

The prescribed fire proposed in Alternative 1 would result in temporary blackening along the ground that would be visible in the foreground and would likely be visible during leaf-off when viewed from the middleground within the months following project completion. Management activities need to meet the SIO within one year. In this climate, with rare exceptions, herbaceous vegetation recovers quickly and reduces the visibility of the burned area after one growing season so that it is no longer noticeable to the casual observer.

The prescribed fire treatment proposed in Alternative 1 would meet the Moderate SIO.

#### **Alternative 2 (No Action)**

##### *Mechanical Treatments*

There would be no immediate or short-term effect to the scenic resource resulting from this alternative. No visible changes would be introduced within the project area. Over time, the old field habitat would be replaced with maturing trees and eventually reach the canopy height of surrounding forest. There would be little variation of form, line, color or texture visible with the landscape character.

##### *Prescribed Burning*

Without conducting prescribed burning, there would be no short-term blackening of the ground visible from travelways. However, untreated fuels contribute to the potential at some point in time for a wildland fire that burns hot enough to result in areas of tree mortality. Such a fire within the project area would change the landscape character for a period of years to decades, depending on the magnitude of the fire.

### Cumulative Effects

All cumulative actions meet the Scenic Integrity Objectives of the area. No significant cumulative impacts to the visual resource are expected to result from this action coupled with past and reasonably foreseeable actions in the view shed.

## **Recreation Resources**

### Project Issue Related to this Resource

Timber harvesting and temporary road construction may have a negative impact on dispersed recreation opportunities in the area including hiking (in particular the ANST), hunting, bird watching, etc.

### Scope of the Analysis

The geographic scope of the environmental effects analysis on dispersed recreation will include the project area. Potential impacts to visual resources, particularly along the ANST, are covered in the section above. The distance from the proposed harvest units and temporary roads to system Forest Service Roads (FSRs) and the ANST will be used as an indicator for this issue, as well as, a qualitative discussion of impacts to dispersed recreation experiences within the project area. The overall temporal bounds will include the timeframe when ongoing harvest, site preparation, and prescribed burn activities are occurring (approximately 1 to 5 years).

### Existing Situation

As stated in the visual resource discussion above, the majority of the project area (the Management Prescription Area 13 portion) has been classified as Roaded Natural under the Recreation Opportunity Spectrum. The Crabtree Meadows burn block is located in MA Rx 4A - Appalachian National Scenic Trail Corridor and 4D - Special Biological Areas. The portions of these Management Prescription Areas that the burn block is in is also classified as Roaded Natural under the Recreation Opportunity Spectrum. The proposed accessible picnic area improvements at the Crabtree Falls Observation Trail are located within MA Rx 2C2 – Eligible Scenic Rivers and this MA is classified as Roaded Natural. The proposed parking area improvements to existing parking areas within and near Mountain Pleasant National Scenic Area are located in MA Rx 4 and MA Rx 4F (Mount Pleasant National Scenic Area) and are both classified as Roaded Natural. In terms of actual dispersed recreation use, the project area receives considerable hunting and fishing pressure both in the fall and during the spring turkey season. Besides hunting and fishing, dispersed recreation in the general forest of the MA Rx 13 portion of project area includes bird watching, mushroom gathering, berry picking, driving for pleasure,

and accessing trails. Similar use occurs in the Crabtree Meadows area. Dispersed recreation in the form of hiking is more common year-round on the ANST, which is near harvest units #1 and #2 and crosses FSR 596, which is the western control line of the Crabtree Meadows burn block. The project area does contain stocked and fishable wild trout streams. The stocked segments of Piney River are very popular with fishermen. Dispersed camping along the Piney River is also a popular activity. While people do hike through the general forest area, this activity is relatively rare. The abundance of open and closed roads in the area provide more than ample opportunities for hiking, rendering overland travel in the general forest somewhat less desirable and unnecessary.

Although the project area is adjacent to the highly visited Mount Pleasant National Scenic Area, vehicular traffic to the project area is not expected to impact visitors since log trucks would be hauling timber on Forest Service roads to the north of the scenic area.

#### Direct, Indirect, and Cumulative Effects

##### **Alternative 1 (Modified Proposed Action)**

For Alternative 1, depending on the timing of the timber harvest, temporary road construction, site preparation treatments, and prescribed burn, hikers, hunters and other recreation visitors would potentially see and hear logging activities and encounter log trucks on Forest Service Roads within the project area. In Alternative 1, these potential intermittent interactions are not expected to last more than five years once logging operations commence. After timber harvest activities are completed, temporary developments would be blocked and seeded and revegetated. In the short term, the seeded skid trails, temporary roads, and log landings would provide easy access into the interior of the project area. Hunters and others exploring the general forest would benefit by these temporary developments. Log landings in particular would create additional dispersed camping opportunities in the area. Over time, however, use of these sites would decline as they become overgrown with vegetation. The increase in early seral habitat would be expected to improve hunting (such as deer) opportunities in the area. Conversely, with increased access, there is a potential for an increase in illegal activities such as unauthorized vehicle use, poaching, and littering. This area of the Pedlar Ranger District has had minor problems with these types of activities in the past, but reinforcement of vehicular barriers upon project completion would improve the condition. As a result, no significant increase is expected in illegal off-road vehicle use, poaching, or littering with the implementation of the project. During the prescribed burns, public access to the areas would be prohibited for safety reasons. This access restriction would likely only occur the day of the burns and for a day or two post-burn.

##### *Impacts to hikers on the Appalachian National Scenic Trail*

In Alternative 1, the nearest harvest units (Units #1 and #2) to the ANST is east of the trail. The ANST, both in this area and along its entire length across the Forest is allocated to Management Prescription 4A – Appalachian National Scenic Trail Corridor. Although harvest and site preparation activities would not be seen from the ANST, noise associated from these activities would likely be heard during activity within harvest units #1 and #2. Log truck traffic would also be encountered where the trail crosses the intersection of FSR's 48, 63, and 1176. The noise from

harvesting and site preparation is expected to last intermittently from one to five years. The impacts of log truck traffic would be limited to seeing and/or avoiding the trucks as they are leaving and entering the sale area roads. The Forest Service Roads in the area where the ANST crosses are not conducive to high speeds, thus reduced speeds would minimize potential conflicts with hikers although the sound of braking trucks would be greater in this area. Standard signs cautioning “Log Truck Traffic” would be posted near the intersection of FSRs 48, 63, and 1176. In addition, smaller versions of the same sign may be posted on the ANST at either side of its crossing of the intersection. Harvesting activities are expected to occur primarily on weekdays, while a majority of hiking occurs on weekends, with the exception of through hiker season (mid-April through June). Therefore, the impacts to hikers on the ANST from vegetation management activities would be minimal with the implementation of Alternative 1.

The prescribed burns would impact ANST hikers directly due to the trail being closed near the burn blocks on the day the burn is conducted. The Brush Mountain burn may close the trail for more than one day due to its larger size and fact that the trail goes through the western side of the burn. Although these closures would be short-term and depending on time of year, shuttles around the burn blocks could be offered to affected hikers.

The parking area improvements to the small areas at Hog Camp Gap and Mount Pleasant trailheads would entail minor expansion (4-5 spots for each area) through delineation and some expansion of road shoulders and gravel placement.

The Crabtree Falls Observation Trail accessible picnic area project would create an accessible trail to the picnic area near the arched trail bridge. Currently, there is no defined path to get to the area and foot traffic has eroded the shoulders of the nearby parking area. The project would create an improved path and would level and delineate the individual picnic sites.

### **Alternative 2 (No Action)**

No timber harvesting, road construction, or prescribed burning is proposed. As a result, this alternative would have no direct or indirect impact on the area’s recreation experience.

### Cumulative Effects

There are no ongoing timber sales that use the same Forest Service roads in the area. There are no additional activities planned in the reasonably foreseeable future, which, when combined with past activities and the implementation of Alternative 1 would cause a significant cumulative effect on the recreation resources of the area. Alternative 1 is consistent with the Roaded Natural recreation opportunity assigned to the project area.

## **Access or Roads**

### Issue Related to this Resource

Concern over the interaction between hikers and log truck traffic.

### Scope of the Analysis

The spatial bounds of the analysis of effects are limited to Forest Service Roads within or adjacent to MA Rx 13 which comprises the Piney River Vegetation Project Area. The temporal bounds include the time of ongoing log truck traffic from the project area within the next five years.

### Existing Situation

Access to the project area is from US Highway Route 60 and State Road 634 for units 1,2,3,4, and 6. State Road 827 & State Road 745 would access the Eastern project boundary near unit 5 and State Road 629 would be used to access unit 7 in the Southeastern portion of project boundary. Several Forest Service Roads are within the project area and provide access to treatment areas for this project. These roads are included in the table below including their public motorized access status.

**Table 25. Existing Forest System Roads to be utilized within the Project Area**

<b>Road Name</b>	<b>Road Number</b>	<b>Total Road Length in Project Area (Miles)</b>	<b>Operational Maintenance Level</b>	<b>Traffic Service Level*</b>	<b>Public Motorized Use Status</b>
Big Piney	63	9.00	3	O	Open
Hog Camp	48	1.35	2	O	Seasonal
Rocky Mtn FAA	1176	1.02	2	O	Open
Greasy Springs	246	3.90	3	O	Open
Coon Bridge	1167	0.78	2	O	Seasonal
Cardinal	1167C	0.54	1	A	Closed

\*O – open to motorized traffic, A – closed to public motorized traffic, administrative only.

Operational Maintenance Level 1 roads are closed to all vehicle traffic. Operational Maintenance Level 2 roads are maintained for high clearance vehicles; Level 3 roads are suitable for passenger car travel. Traffic Service Level describes a road's design for speed, travel time, traffic interruptions, freedom to maneuver, safety, driver comfort and convenience.

Forest system roads that would be utilized for commercial timber hauling are currently in fair to poor condition. Due to declining road maintenance funds, these roads have not been maintained to standard. These roads are graveled in places or otherwise native surfaced, single track with limited turn outs, with generally acceptable grades. Road use is generally light confined by the seasonal closure schedule and used primarily by hunters and those exploring the forest by way of motorized vehicles.

The Forest's Transportation System Analysis Process and Report (TAP) was reviewed for this project. The TAP reaffirmed the need to maintain the system roads utilized within the project area as part of the Forest's overall transportation system. The TAP also recommended the future consideration of decommissioning of Forest Service Road #63 – Piney River Rod and Gun when the TAP was completed.

### Direct and Indirect Effects

#### **Alternative 1 (Modified Proposed Action)**

The commercial harvest activities proposed under this alternative would involve the following Forest System Roads: Big Piney 63, Hog Camp 48, Coon Bridge 1167, Rocky Mountain FAA 1176, Greasy Springs 246, and Cardinal 1167C. No changes in these road designations, management objective levels, or use classifications are needed for this project. No new system road construction is proposed in this alternative. These roads would require maintenance before, during and after project implementation. Specifically, road maintenance activities would include roadside daylighting/brushing, grading, ditch and culvert cleaning, and gravel placement. In regard to public safety, roads used for hauling timber products would be signed to alert Forest users of log truck traffic. The pre-haul, during haul, and post haul road maintenance requirements in the timber sale contract would ultimately leave these roads in an improved condition.

One temporary road segment, totaling 1.06 miles, already exists and would provide access to Unit #4. This road segment is grown in and currently unsuitable for timber hauling. Prior to hauling, temporary roads would be daylighted, graded, graveled. This road would be maintained during haul, and would be revegetated and closed to all vehicle traffic after use.

One Operational Maintenance Level 1 Road – Piney River Rod and Gun Road (FSR 63A), would be decommissioned from the Forest Service Road System. This road has not been open to public travel for many years and the decommissioning would involve removing two culverts and stabilizing the residual roadbed. Any other drainage problems would be corrected at the same time of the culvert removals. The road corridor is in a poor location as it is in the floodplain of the South Fork of the Piney River for almost the entire length. Removing the culverts and stabilizing sections of the road would improve long-term watershed health while still providing relatively easy public foot travel for dispersed recreation activities.

Impacts to soil, aquatic, hydrology/watershed, and recreation resources from the road projects are addressed in each of those respective sections in this chapter. No substantial impacts are anticipated in any resource area. There are 16.59 miles of system road maintenance proposed in this alternative.

#### **Alternative 2 (No Action)**

Under the No Action Alternative, no roads would be maintained by management activities. With the current and declining road maintenance funding, road conditions of existing roads within the project area would continue to deteriorate due to lack of adequate maintenance, although this effect over the span of this analysis would be minor as roads in this area are mostly stable.

### Cumulative Effects

There would be no change in the open road density in either alternative. As stated in all the resource sections that dealt with the road projects presented here, no substantial impacts are anticipated in any resource area because of road use in the implementation of the action alternative when combined with current use by the public. No additional timber management activities are planned to occur in the next 10 years.

## **Economics**

### Issue Related to this Resource

None.

### Existing Situation

The demand for forest products is strong in this area of the state in general and particularly strong in Amherst County. The two primary forest products created from commercial timber sales from the action alternative are sawtimber and pulpwood. There are a number of sawmills which utilize National Forest timber as a source of raw material for lumber production. Specifically, there are five sawmills within the 60 mile radius of this project area.

As with sawtimber, the demand for both pine and hardwood pulpwood is also strong in the area. Two paper mills relatively close to the project area utilize pulpwood from the National Forest. The Greif Brothers paper mill is located in Riverville, Amherst County. The Greif Brothers mill uses hardwood pulpwood exclusively for the manufacture of their products. The WestRock paper mill is located in Alleghany County (approximately 65 miles from project area) and is another potential market for pulpwood from this project even though it is slightly beyond the previously mention 60 mile haul radius. The WestRock mill utilizes both pine and hardwood pulpwood for the manufacture of their paper products. There is also one pulpwood concentration yard in Buena Vista, VA located approximately 21 miles from the project area. Pulpwood from this yard is primarily sent to WestRock in Covington. WestRock also accepts wood biomass for their mill.

Lumber sawmills and the pulp mills provide an important source of employment and revenues for the area. Recent trends suggest that demand for stumpage is steady to increasing and the detrimental effects of the 2008-2009 recession on the forest products industry is in the past (Rephann, 2013): This portion of the Commonwealth of Virginia has a manufacturing and agriculture economic base providing 30% of the jobs and \$138 million in products. In regards to the Piney River Vegetation Project, the project area is located in a region that has traditionally been rural in character. According to the 2014 Census, 31,594 people reside in Amherst County.



## Direct and Indirect Effects

### **Alternative 1 (Modified Proposed Action)**

To meet the need of the project, the trees identified for removal would be sold to fulfill the need for providing marketable wood products. Local monetary benefits arise primarily from harvesting, primary processing, and transportation. These economic benefits result in revenues and/or jobs for local residents. The concept of *value-added* is the increased worth of a product as additional processing takes place. Each step harvested timber takes, from stump to final product, adds value to a product and to the economy of Virginia. In the 2006 study, Virginia's Forests Our Common Wealth, Virginia Department of Forestry estimated that for every dollar of stumpage received by forest landowners, \$41.82 is generated by value added activities. In a more recent 2013 report (Rephann, 2013) it was found that every job created in forestry-related industries in the Virginia economy produces 1.6 other jobs in Virginia and that every dollar generated in the agriculture and forestry-related industries results in another \$1.63 value-added in the Virginia economy. The forestry sector alone in Virginia has a total impact of over \$17 billion in total industry output, approximately 103,800 jobs, and \$8.8 billion in Value-added. In an attempt to quantify the social economic benefits of ecological services provided by the forestland in Virginia, a value transfer approach was used to determine that the Commonwealth receives \$6.385 billion in estimated air and water environmental services value from forestry each year (Rephann, 2013).

The value of wood products in this project is average when compared to other areas on the Ranger District. The Forest Service strives to reduce the cost of sale preparation and administration of all timber sales while still complying with all state and federal laws and regulations. The Forest Plan states that timber sales are used as a cost-effective method of achieving other ecological, biological and aesthetically desired conditions. Forest product outputs contribute to the social and economic well-being of the people living in the area.

While economic viability is a consideration in selecting an alternative for implementation, it is not the sole factor considered. Maximizing net value is not the primary purpose at the expense of detrimental impacts on natural resources within the project area. As stated in Chapter 1 of this environmental assessment, the purpose and need for this project is to create a variety of forest structural conditions for wildlife habitat in the project area. Therefore, while the agency strives to avoid losing money on a timber sale, it certainly does not implement timber harvesting projects to solely generate revenue. Thus, the determination of which and how many trees to harvest is driven more by the need to achieve the Desired Future Condition for the project area rather than the value of the tree(s) themselves.

### **Alternative 2 (No Action)**

No income would be directly generated by Alternative 2 and no value added benefit to the area or regional economy would result.

## Cumulative Effects

Impacts of Forest Service timber sales on privately held timber are expected to be minimal. Thus, the impact of this and other cumulative timber sale activity on the supply side of the economic situation is minor. Ultimately, the price of National Forest Service timber is established by the market through a competitive bidding process. Timber sales on the Ranger District within the 60-mile radius of this sale usually receive from 1-3 bids per sale. Competition is fair. Therefore, we do not believe or expect Forest Service timber to “undercut” the value of the timber market or privately held timber values.

There are no past or reasonably foreseeable future activities planned in the project area that, when combined with any of the alternatives, would have a cumulative effect on economics.

## **CHAPTER 4 – PROJECT CONSULTATION AND COORDINATION**

### **A. AGENCIES & ORGANIZATIONS CONSULTED**

The Forest Service consulted the following Federal, state, and local agencies and organizations during the development of this EA:

U.S. Fish and Wildlife Service, Southwest Virginia and Virginia Field Offices  
Virginia Department of Game and Inland Fisheries  
Virginia Department of Conservation & Recreation, Division of Natural Heritage

### **B. FOREST SERVICE INTERDISCIPLINARY TEAM MEMBERS**

Lauren Stull, District Ranger  
Eric Freels, Acting District Ranger  
John Donahue, ID-Team Lead, Forester / Timber Management Assistant (Retired)  
Nicholas Redifer, Silviculturist  
Daniel Wright, Wildlife Biologist  
Genny Kotyk – Forester  
Jason Hattersley – Timber Management Assistant  
Dawn Kirk, Fisheries Biologist  
Jessie Howard, Planner/Editor  
Sara Hivick, NEPA Planner  
Ginny Williams, Landscape Architect  
David Rasmussen, Engineer  
David Whitmore – Recreation Program Manager  
Zack Mondry – Hydrologist (completed the soil and hydrology analysis)  
Larry (Butch) Shaw, Fire Management Officer  
Mike Madden, Archeologist  
Rich Guercin, Archeologist  
Ben Neuhold, Archeologist

**LITERATURE CITED**

- Burns, R.M. and Honkala, B.H., 1990. *Silvics of North America*. Two volumes: Volume 1; Conifers and Volume 2; Hardwoods. USDA Forest Service. Agriculture Handbook 654. 1552 pp. USGPO, Washington, D.C.
- Carlock, D.M., R.H. Conley, J.M. Collins, P.E. Hale, K.G. Johnson, and M.R. Pelton. 1983. The tri-state black bear study. Tennessee Wildlife Resources Agency Tech. Rep. #83-9. 286 pp.
- Chamberlin, T.W., R.D. Harr, and F.H. Everest. 1991. Timber harvesting, Silviculture, and Watershed Processes, in: *Influences of Forest and Rangeland Management on Salmonid*
- Downey, D.M. and J.P. Haraldstadt. 2013. Water Chemistry of North Branch Simpson Creek and the Rich Hole Wilderness Fire. A Report for the US Forest Service George Washington and Jefferson National Forests, by Environmental Chemistry Group, James Madison University. February 2013.
- Franklin, Jerry F. 1988. Structural and Functional Diversity in Temperate Forests. pp. 166-175, Biodiversity, E. O. Wilson editor, National Academy Press. Fishes and Their Habitat. American Fisheries Society Special Publication 19:181-205.
- Eiler, J.H., 1981. Reproductive biology of black bears in the Smoky Mountains of Tennessee.
- Eiler, J.H., Wathen, W.G. and Pelton, M.R., 1989. Reproduction in black bears in the southern Appalachian Mountains. *The Journal of Wildlife Management*, pp.353-360.
- Hamel, P.B. 1992. Land manager's guide to the birds of the South. Chapel Hill, NC: The Nature Conservancy. pp. 1-12.
- Harris, Larry D. 1984. The Fragmented Forest: Island biogeography theory and the preservation of biotic diversity. The University of Chicago Press 211 Foster, D.R., and E.R.
- Boose. 1992. Patterns of forest damage resulting from catastrophic wind in central New England, USA. *Journal of Ecology* 80:79-98
- Hattersley, J. 2020. George Washington-Jefferson NF, Glenwood-Pedlar Ranger District.
- Healy, W. and E. Nenno. 1983. Minimum maintenance versus intensive management of clearings for wild turkeys. *Wildl. Soc. Bull.* 11(2):113-120.
- Healy, W.M. 1985. Turkey poult feeding activity, invertebrate abundance, and vegetative structure. *Journal of Wildlife Management* 49:466-472.
- Howard, J. 2019. George Washington-Jefferson NF, Supervisor's Office.

- Hunter, W.C., D.A. Buehler, R.A. Canterbury, J.L. Confer, and P.B. Hamel. 2001. Conservation of disturbance-dependent birds in eastern North America. *Wildlife Society Bulletin* 20(2):440-455.
- Hurst, G. A. 1978. Effects of controlled burning on wild turkey poult food habits. *Proc. Southeastern Assoc. Fish Wildl. Agencies* 32:30-37.
- Kilgo, J.C., K.V. Miller, and W.P. Smith. 1999. Effects of group-selection timber harvest in bottomland hardwoods on fall migrant birds. *Journal of Field Ornithology* 70:404-413.
- Kirk, D. 2020. George Washington-Jefferson NF, Glenwood-Pedlar Ranger District.
- Knox, M. 2011. What is wrong with the National Forest deer herd? Part 1. *Whitetail Times* 26(4):8-10.
- Lafon, N.W., G.W. Norman, D.E. Steffen, J.C. Jeffreys, and R.D. Fell. 2001. Forest clearings management: insects and vegetation for wild turkey broods. *Proceedings of the Southeastern Association of Fish and Wildlife Agencies* 55:547-559.
- Litvaitis, J.A. 2001. Importance of early-successional habitats to mammals in eastern forests. *Wildlife Society Bulletin* 29(2):466-473.
- Natural Resource Conservation Service. 2019. Web Soil Survey Tabular Data Version 13.
- Nenno, E. and J. Lindzey. 1979. Wild turkey poult feeding activity in old field agricultural clearings and forest communities. *Trans. Northeast. Sect., The Wildlife Society*. 36:97-109. New Hampshire Forest Sustainability Standards Work Team (NHFSSWT), 1997. Habitat - Mast, Section Three pp. 55-56 in *Good Forestry in the Granite State*
- Norman, G.W., J.C. Pack, C.I. Taylor, D.E. Steffen, and K.H. Pollock. 2001. Reproduction of eastern wild turkeys in Virginia and West Virginia. *J. Wildl. Management* 65(1):1-9.
- Pack, J., W. Igo, and C. Taylor. 1988. Use of prescribed burning in conjunction with thinnings to increase wild turkey brood range habitat in oak-hickory forests. *Trans. Northeast. Section, The Wildlife Society*. 44:37-44.
- Page-Dumroese, Deborah S. and Ann M. Abbott and Thomas M. Rice. 2009. Forest Soil Disturbance Monitoring Protocol, Volume 1: Rapid Assessment, United States Department of Agriculture, U.S. Forest Service, General Technical Report WO-82a, September 2009. Rapid Bioassessment Reports, GWJNF, 2020.
- Rephann, T.J. 2013. *The Economic Impacts of Agriculture and Forest Industries in Virginia*. Weldon Cooper Center for Public Service, University of Virginia.
- Schroeder, R. L. 1985. Habitat suitability index models: eastern wild turkey. *U.S. Fish and Wildl. Serv. Biol. Rep.* 82(10.106). 33pp.

Simon, Steven A. 2011. Ecological Zones on the George Washington National Forest: First Approximation Mapping. The Nature Conservancy, Virginia Field Office. Unpublished report

Smith, Eric P., and Reese Voshell. 2013. Analysis of Benthic Metrics in GWJ - June 29, 2013. Final Report Submitted to the George Washington & Jefferson National Forest.

Smith, E.P. and J. Reese Voshell, Jr. 1997. Studies of benthic macroinvertebrates and fish in streams within EPA Region 3 for the development of biological indicators of ecological condition. Part 1 Benthic macroinvertebrates. Final Report January 24, 1997 Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; Cooperative Agreement CF821462010, 23p.

Southern Appalachian Man and the Biosphere (SAMAB). 1996. The Southern Appalachian Assessment Terrestrial Technical Report. Report 5 of 5. Atlanta: U. S. Department of Agriculture, Forest Service, Southern Region.

Steffen, D.E., N.W. Lafon, and G.W. Norman. 2002. Turkeys and oaks. Pages 241-255 in W.J. McShea and W.M. Healy, editors. Oak forest ecosystems: ecology and management for wildlife. Johns Hopkins University Press, Baltimore, Maryland, USA.

Suthers, H.B., J.M. Bickal, and P.G. Rodewald. 2000. Use of successional habitat and fruit resources by songbirds during autumn migration in central New Jersey. *Wilson Bulletin* 112:249-260.

Sweeney, B.W. 1993. Effects of streamside vegetation on macroinvertebrate communities of White Caly Creek in eastern North America. *Proceedings of the Academy of Natural Sciences of Philadelphia*. 144:291-340.

USDA. Aug. 2017. Healthy Forests for Golden-Winged Warblers. Working Lands for Wildlife. FY17-21 Conservation Strategy

U.S. Department of Agriculture Forest Service. 2014. Final Environmental Impact Statement (FEIS) for the George Washington National Forest.

U.S. Department of Agriculture Forest Service. 2004. Land and Resource Management Plan: Detailed Monitoring and Evaluation Report. Fiscal Years 2001 through 2003. George Washington and Jefferson National Forests.

U.S. Department of Agriculture Forest Service. 2014. Revised Land and Resource Management Plan George Washington National Forest, Management Bulletin R8-MB-143A. USDA Forest Service, George Washington & Jefferson National Forests. Roanoke, VA.

U.S. Department of Agriculture Forest Service - National Best Management Practices for Water Quality Management on National Forest System Lands. Volume 1: National Core BMP Technical Guide. FS-990a., 2012.

U.S. Environmental Protection Agency. 1989. Rapid bioassessment protocols for use in streams and rivers: benthic macroinvertebrates and fish. EPA-444/4-89/001. Washington, DC: U.S. Environmental Protection Agency, Office of Water Regulations and Standards.

Virginia Department of Game and Inland Fisheries. 2013. The Virginia Fish and Wildlife Information Service. Website: <http://vafwis.org/fwis/?Menu=Home.Visitor+Options>

Virginia Fish and Wildlife Information Service, 2019. Species Observation Report dated August 2, 2016. <https://vafwis.dgif.virginia.gov/fwis>

Wathen, W.G., 1983. Reproduction and denning of black bears in the Great Smoky Mountains.

Wood, P.B. et al. 2013. Management guidelines for enhancing Cerulean Warbler breeding habitat in Appalachian hardwood forests. American Bird Conservancy. The Plains, Virginia. 28pp

Wunz, G.A. and Pack, J.C., 1992. Eastern turkey in eastern oak-hickory and northern hardwood forests. *The Wild Turkey: Biology and Management*, pp.232-286.

U.S. Department of Agriculture Forest Service. (2010). Environmental Assessment of Forestwide Non-Native Invasive Plant Control George Washington and Jefferson National Forests. USDA Forest Service, George Washington & Jefferson National Forests. Roanoke, VA.

U.S. Department of Agriculture 1997c. Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region. Forestry Report R8-FR 62. Atlanta, GA: U.S. Forest Service, Southern Region.

Virginia Department of Forestry. 2011. Virginia Forestry best management practices for water quality in Virginia. 23-50 pp. Virginia Department of Forestry.